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"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—SHERMAN.

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THE IDEAL RATION FOR AN ARMY IN THE
TROPICS.*

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ADAPTABILITY to the individual's needs, customs and habits, is the key-note of any successful dietary, and were the theme an ideal ration for an army of native Cubans, Puerto Ricans, or the various races of Filipinos, serving in their lands, it would describe a varying one suited to their customs, desires and stomachs, but it is assumed in this paper that the subject in full is "The Ideal Ration for an Army of Native Americans Serving in the Tropics," the soldier whom we have seen shivering with the ague on the lower Mississippi, and from cold at Pembina, boiling at Yuma and freezing at Sitka, but always doing his full duty, and never suffering from malnutrition.

The first legislation fixing the components of the Army Ration was in 1775; since that time the Congress has legislated directly upon the subject on ten occasions, and has also authorized the President to make alterations in the component parts of the ration, and under this authority various changes and additions, based upon the recommendations of surgeons, commissaries, inspectors and line officers, have been made; and these recommendations have been based upon an experience gained

*One of the papers submitted in competition for Dr. Seaman's prize.

in three wars, many Indian campaigns and a century of garrison life, ranging from Alaska with -50° to Arizona with 120° , from the table lands of the Rocky Mountain region to the swamps of Louisiana and Florida, and, after a careful study of all known rations, including that of our navy, the writer has no hesitation in placing himself on record as claiming that the dietary resulting from a judicious use of our army ration with its authorized substitutive issues and its authorized savings, is superior to that resulting from any other ration in existence to-day.

Table "A" shows the first ration established for the U. S. Army in 1790, and also the present ration with all substitutive issues and savings, the evolution of a century's study and experience. An examination of this table will show that there has been an addition in quantity of about 75 per centum, and 300 per centum in variety.

The scientist will find that from this ration alone at least half a dozen dietaries may be evolved with varying proportions in the relative amounts of proteids, hydrocarbons, and carbohydrates, and in each a sufficiency of nitrogen and carbon to sustain the system under the heaviest strain of work; the soldier finds a sufficiency of food to prevent hunger or weakness, and a variety which prevents cloying of the appetite; the company commander finds authority to vary this ration, flexible in itself, by savings and purchases to almost any extent to suit every condition that may arise, therefore to these three classes it is now an almost ideal ration.

The Regulations tell us that the ration is "an allowance of subsistence" and that "special regulations for soldiers' fare cannot be made to suit each locality and circumstance. Personal care and judgment on the part of company officers are relied on to prevent waste or misuse."

"By due economy some part of the ration can be saved and sold, and the proceeds applied to provide additional articles of diet," in fact saving can be made under every component save fruit alone, and the result is, as has been wisely stated, "A considerable difference between the ration of the soldier and the diet of the soldier."

This authorized system of company savings is supplemented by the opportunity to purchase from an extensive and con-

TABLE "A."

ARTICLES.	Quantities per Ration.		Quantities per 100 Rations.		REMARKS.
	Ounces	Gills	Pounds	Gallons	
THE ARMY RATION, 1790.					
Beef, or Pork, Bread or Flour, Rum, Brandy or Whiskey, Salt, Vinegar, Soap, Candles,	16 12 16	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	100 75 100	$1\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	Or the value thereof.
	$\frac{1}{2}$ $\frac{1}{2}$		2 1		
THE ARMY RATION, 1900.					
Meat Components:					
Fresh Beef, or Fresh Mutton, when the cost does not ex- ceed that of Beef, or Pork or Bacon, or Salt Beef, or Dried Fish, or Pickled Fish, or Fresh Fish, or Canned Salmon,	20 12 22 14 18 16		125 75 137 87 112 100		Beef may be reduced and the equal money value in Ham or other articles for sales is- sued. Par. 4, G. O. 178, H. Q. A., A. G. O. 1899. Savings allowed. Savings not allowed. Savings not allowed. Savings allowed.
Bread Component:					
Flour, or Soft Bread, or Hard Bread, or Corn Meal, Baking Powder for troops in the field when necessary to enable them to bake their own bread,	18 16 20 $\frac{1}{2}$		112 100 125 4		(Savings of flour by troops in the field will be credited to the company fund. Savings allowed. Savings allowed. Savings not allowed.
Vegetable Components:					
Beans, or Pease, or Rice, or Hominy, Potatoes, or Potatoes 12 $\frac{1}{2}$ ozs., and Onions 3 $\frac{1}{2}$ ozs., or Potatoes 11 $\frac{1}{2}$ ozs., and Canned Toma- toes 4 $\frac{1}{2}$ ozs., or 4 $\frac{1}{2}$ ozs. of other fresh vegetables not canned, when they can be obtained in the vicinity of the post or transported in a wholesome condition from a distance,	2 $\frac{1}{2}$ 16		15 10 100		Savings allowed. Savings allowed. Savings not allowed, but com- mutation allowed when deemed advisable by Chief Commissaries.
Fruit Components:					
Dried Fruits: Apples, Peaches, Prunes, etc.,	2		12		Savings not allowed.
Coffee and Sugar Components:					
Coffee, green, or Roasted Coffee, or Tea, green or black, Sugar, or Molasses or Cane Syrup,	1 $1\frac{1}{2}$ $\frac{1}{2}$ 2		10 8 3 15		Savings allowed.
		$\frac{1}{2}$		2	
Seasoning Components:					
Vinegar, Salt, Pepper, black,	$\frac{1}{2}$ $\frac{1}{2}$	$\frac{1}{2}$	4 $\frac{1}{2}$	1	Savings allowed.
Soap and Candle Component:					
Soap, Candles, when illuminating oil is not furnished by the Quar- termaster's Department,	$\frac{1}{2}$ $\frac{1}{2}$		4 1		Savings allowed.

N. B. The proceeds of savings are applied to provide additional articles of diet.

THE IDEAL RATION.

TABLE "B."

THE IDEAL RATION FOR AN ARMY IN THE TROPICS.

ARTICLES.	Quantities per Ration.		Quantities per 100 Rations.		REMARKS.
	Ounces	Gills	Pounds	Gallons	
Meat Components :					
Fresh Beef,	20		125		Beef may be reduced and the equal money value in any articles for sales issued.
or fresh Mutton, when the cost does not exceed that of Beef,	20		125		
or Canned Fresh Beef or Mutton,	16		100		No savings allowed.
or Pork,	12		75		Savings allowed.
or Bacon, or Ham, or Brawn,	13		75		Savings allowed.
or Salt Beef,	22		137½		Savings allowed.
or Dried Fish,	14		87½		Savings not allowed.
or Fresh Fish,	18		112½		Savings not allowed.
or Canned Salmon,	16		100		Savings allowed.
Bread Components :					
Flour,	18		112½		{ Savings of flour by troops in the field will be credited to the company fund.
or Soft Bread,	18		112½		
or Hard Bread,	16		100		Savings allowed.
or Corn Meal,	20		125		Savings allowed.
Baking Powder for troops in the field when necessary to enable them to make their own bread,	½		4		Savings not allowed.
Vegetable Components :					
Beans, or Oatmeal, or Rice,	2½		15		Savings allowed, except on Rice.
or Pease, or Hominy,	2½		15		Savings allowed.
Potatoes,	16		100		Savings not allowed, but commutation allowed when deemed advisable by Chief Commissaries.
or Potatoes 12½ ozs. and Onions ¾ ozs.,	16		100		
or Potatoes 1½ ozs., and Canned Tomatoes 4½ ozs.; or 4½ ozs. of other fresh vegetables not canned, when they can be obtained in the vicinity of the post or transported in a wholesome condition from a distance,	16		100		
Fruit Components :					
Dried Fruits,	2		12½		Savings not allowed.
Coffee and Sugar Components :					
Coffee, green,	1½		10		Savings allowed.
or Roasted Coffee,	1½		6		Savings allowed.
or Tea, green or black,	¾		2		Savings allowed.
Sugar,	4		25		Savings not allowed.
or Molasses, or Cane Syrup,		½		3	Savings not allowed.
Seasoning Components :					
Vinegar,		⅔		1	Savings allowed.
or Sauer Kraut,		⅔		4	Savings not allowed.
Salt,	½		4		Savings allowed.
Pepper, black,	⅔		4		Savings allowed.
or Curry,	⅔		4		Savings allowed.
Soap and Candle Components :					
Soap,	½		4		Savings allowed.
Candles, when illuminating oil is not furnished by the Quartermaster's Department,	¾		1½		Savings allowed.
Comfort Component :					
Tobacco,	½		3½		Savings not allowed.

N. B. The proceeds of savings are applied to provide additional articles of diet.

stantly increasing list of sales articles, embracing nearly every article of standard and many fancy groceries, such as *no other* nation pretends to provide, or the companies may purchase from local dealers or producers, rendering the present U. S. Army ration and its resulting dietary almost perfectly satisfactory to the Regular soldier, whether serving in the frigid, temperate or torrid zone.

With the advent of green officers and men, unused either to discipline, camp life or to providing or cooking for themselves, complaints of everything, including the ration, naturally arose, and these were magnified until finally he who could tell the greatest tale of suffering was looked upon as the greatest hero.

Illness due to the inuring process, through which all new troops must pass, to homesickness, to change of climate, water and mode of living, improper sanitation, the eating of green fruits, indulging in the trash of the huckster, etc., and to grossly incompetent cooks was all attributed to the "Unsuitableness of the ration for troops in the tropics."

The fact that our Regulars had subsisted upon this ration with satisfactory results, where the heat was as great as in the tropics, and in equally malarious countries, and that the most unhealthy camps and greatest mortality was not among the troops nearest the equator and longest in the tropics*, has no influence upon those who call so persistently for a radical change in the ration.

The annual death rate from disease among our soldiers in the Philippines was 17.20 per thousand; when it is considered that many of these were new troops, most of them were sent to

* Three New York regiments and the 1st U. S. Vol. Engineers rendezvoused at Peekskill, N. Y. Two of these regiments with an average service of six months never left the United States; the other two, with an average service of eight and one-half months, served in Cuba and Puerto Rico respectively; the first two lost 60 by disease, the last two 40.

The 10th, 12th and 13th Pa. Vol. Infantry rendezvoused at Mount Gretna, Pa. The latter two had an average service of nearly eight months, never left the United States, and lost 42 men by disease; the former was in the Philippines, had more than fifteen months service, and lost 7 men by disease. In other words, the regiment that went to the tropics in midsummer and lost twice as many men by the bullet as from disease, served nearly twice as long as the other regiments, was a larger regiment, and yet its loss from disease was only one-third of that suffered by those that remained in this country.

the tropics in midsummer, were confined to a limited area, after a long sea voyage, were subjected to severe toil and great mental strain incidental to the critical situation, and then made a hard campaign in the rainy season, the smallness of this death rate is wonderful and indicates that, from an hygienic standpoint the ration was almost perfect, and the work performed by our soldiers shows that its potential energy left nothing to be desired, and it certainly gave satisfaction to the consumers and to those most directly interested in the results that followed its use.

Criticisms of the present ration generally come from inexperienced theorists, who are earnest but mistaken; they are mostly united upon the one point that rice is a panacea for every ill that soldiers stomachs and bowels are heir to; many of them are eminent professional men who would laugh at the tyro who should presume to instruct them in a science to which they had given the best years of their life, and yet, after at most a few months study, they would substitute for the ration that has been the growth of a century, a diet that no healthy class of our people have adopted. They seem to forget that the ration is for the "man behind the gun," and that we have a generous fund at the command of the surgeon with which to provide a proper dietary for the man on the hospital cot.

When the Subsistence and Medical Departments were confronted at Montauk Point with an invalided army, they quickly rose to the emergency and cared for it as no other army has ever cared for in the world's history.

In justice to the officers who have devoted much time and thought to the, to them especially, important subject of improving the soldier's diet, more space is devoted to refuting some of these theories than the theories themselves deserve.

These theorists "point with pride" to the ration of the Japanese soldier with its 36 ounces of rice, 5 ounces of fresh meat, 5 ounces of vegetables, though his habitat is north of Florida and Louisiana; a reporter, having quoted an army officer as saying, in reply to the question, why does the Subsistence Department furnish bacon to the troops in the tropics? "Because it is palatable, portable, strong in potential energy, has good keeping qualities, useful in all kinds of cooking, and

the soldier desires and needs it"; one of these theorists, a distinguished professional man, said: "He doesn't know what he is talking about; bacon is one of the last things that should be supplied our soldiers in a hot climate; the principal article should be cassava." Just consider giving an American soldier 36 ounces of rice or tapioca without a stomach that could contain it, and realize that if fed on the latter for a week he would commence to lose his vigor and in less than a month anæmia would follow.

They sometimes include the hard-working, rice-eating Chinaman as an example of their theory, but, unfortunately for the theory, the Chinaman is a pork eater when the state of his finances will permit, though poverty in youth compelling him to live on rice, has given him a stomach for a bulky diet; this the American does not possess.

The men who followed Aguinaldo's horde through the jungles of the tropics were meat, bread, and bean eaters, and even when compelled to live on rice for a few days, their reserve strength enabled them to chase down and disperse his anæmic rice eaters.

The theorist claims that our ration contains too much meat, especially fat meat. Notter and Firth say: "The deprivation of fat does not appear to be well borne, even if starches be given, but the exact effects are not known. The great remedial effects produced by giving fat in many of the diseases of obscure malnutrition prove that the partial deprivation of fat is both common and more serious than is supposed. In all the diets ordered for soldiers, prisoners, etc., the fat is greatly deficient in every country."

No intelligent person will claim that troops in the tropics need a pound and a quarter of fresh beef or three-fourths of a pound of bacon every day, but there are times when they need every ounce of one or the other, and when they do not they can get something else, malted milk if they desire it; and here is the grand mistake of those who mean well but neither comprehend the flexibility of the ration, nor that the established ration has two distinct functions, one to supply the necessary food on all occasions, the other to furnish as nearly as possible a fixed standard of value for purchases outside the ration.

A designated sum of gold or silver would not do this, for when foods are dear some of the articles the companies will have for sale will be correspondingly increased in value, and the soldier will therefore receive in exchange for a given quantity of savings, approximately an equal amount of other foods, whether serving in New York or Manila.

The theorist informs us that beans and bacon are the two things above all others that should be replaced by rice. Notter and Firth say: "Rice is poorer in nitrogenous substances than wheat, and is much poorer in fat. Consequently, among rice-feeding nations leguminous seeds are taken to supply the first, and animal or vegetable fats to remedy the latter defect."

Some claim that we should in constructing a ration for Americans in the tropics follow the diet of the native so far as practicable, forgetting that environment, lack of transportation, poverty and shiftlessness have much to do with the ordinary native diet.

Assistant Surgeon P. R. Egan, U. S. Army, an officer of eighteen years' experience says: "Everywhere I found the main causes assigned to be anæmia and phthisis. Everywhere I went I was struck by this ever-prevalent anæmia. The pale, yellowish, waxy skin, bloodless lips and swollen, puffy features formed a picture never seen by me out of tropical Puerto Rico. Yet I soon found that these people had been living on rice, beans, maize, dried codfish and fruits. Meat very rarely entered into their diet. They and their fathers before them had lived exclusively on the diet urged by the public press as suitable for tropical climates, and the result filled the hospitals with such ghastly cases of anæmia that no one who has once seen the picture can ever forget the impression. On the other hand, I soon discovered that the people who lived in the towns, and could afford it ate two hearty meals daily. These people, I believe, used more meat than we used in American cities, and there is no doubt in my mind but that I have used more meat and felt more need for it since I have been here than I have ever used in the same time in the United States. Yet I am one of the few that have not had to go home for ill health; while the natives that eat in the hotels with me, and as freely as I do,

are perfectly healthy individuals who showed not the least trace of anæmia."

The plague and cholera are more fatal among the ill-fed natives of the tropics than among the acclimated foreigners, who live on a mixed diet with meat an important component. Beri-beri is now attributed to malnutrition, due to a monotonous and low dietary.

As showing that fatty foods are needed in the tropics, or that native Americans crave them when serving there, the writer is reliably informed that the Subsistence Department is called upon by the officers and troops serving in the tropics, to furnish for sales as large a per centum, *pro rata*, of breakfast bacon, butter, devilled ham, ham sugar cured, lard and sardines, as for the same troops when serving in the United States.

The British have been in India for two hundred years and their troops have operated there extensively for one hundred and fifty years and while they vary the Sepoy's ration to suit the various races, their own, after a century and a half of experience, where rice is cheap and meat dear, is :

Meat	16	ounces
Bread	16	"
Potatoes	16	"
Rice	4	"
Sugar	2.5	"
Tea	0.71	"
Salt	0.66	"

And these bread and meat eaters have borne the "White man's burden" with honor to their manhood.

In South Africa to-day it is biltong against canned meats and the fearless assaults and unflinching defense show it.

In this connection it will be noticed that, while the Esquimaux eats fat, the wild Indian, buffalo meat, and the native of the tropics rice and fruit, they all seem to thrive much better in their own habitat when fed upon army rations, which they never refuse, and also that all these eaters of a limited dietary are to-day, and for two hundred years have been ruled by those who live on a mixed diet, with meat and bread predominating.

Before the Civil War, when the master desired the best practical food for his slave, food that would keep him in the best physical condition, the diet was meat, largely bacon, and

corn meal, throughout the South, in some parts of which the climate very nearly resembles that of our Colonial possessions, the result was magnificent physical specimens, and phthisis and anæmia were practically unknown.

The master, while a good provider, did not desire to squander money upon his servant, rice was indigenous to many parts and very cheap, but experience had taught him that for strength and health some other food was essential; and when his son took up arms it was "hog and hominy" that kept up his courage, which was sublime, and his strength, which was magnificent.

Captain William Stephenson, Asst. Surgeon, U. S. A., an officer of sixteen years' experience, said: "My personal experience of a year in Tampa, Puerto Rico and Santiago, was that I craved and ate as much meat of all kinds, relatively to all food eaten, as in cooler climates. I believe that meat consumption among the natives of hot countries, is limited by their purses, not their tastes. In Cuba and Puerto Rico I found the noon and evening meals in private houses and restaurants prodigal of meats of all kinds."

The writer recently requested several line officers with from twenty-two to thirty years of the most diverse military education and experience, who had served directly with troops for nine months in Cuba, to suggest any changes in the ration that their experience rendered advisable, each and every one said that the ration was ample and did not see how any change could be made that would benefit the troops, and that certainly no radical change would be advisable or acceptable, and similar statements were made by Regulars and Volunteers, officers and privates, respecting the ration in the Philippines.

The American officer is something of an iconoclast and certainly not so conservative as to be unwilling to radically change our ration when theory, science and experience combined (as they have been in the formation of the present one) point out a better, but it would indeed be the height of folly to do so at the loud and persistent calls of Sciolists who "have just discovered that there are 12 bunces of bacon in the soldier's ration."

As stated in the beginning, the food supply of a people is largely a matter of adaptation, in which the factors: 1st—The

modifications of the digestive apparatus of that people, and 2d—The native and naturalized products of the region long occupied by them. The modifications (1) are influenced by (a) Race, (b) Habits and Customs, (3) Social Condition.

The food products (2) are affected by (a) climate and soil, (b) industrial and economical conditions.

In the United States, a country of large extent, wheat and beef are staple products in the North, where the people have been adapted to their consumption, beans being a secondary product.

In the South, corn (maize) and bacon are staple with a like adaptation, rice being a secondary product.

Cheap and abundant transportation has modified this somewhat.

During the Civil War the Southern armies subsisted mainly on corn, with "meat" (bacon) when available. The Federal armies were regularly supplied with "hard tack," (wheat bread) and beef, or bacon, the latter being a food approved by both armies. As shown by the foregoing considerations and the experience of a century, these four articles must form the basis of the ration of the American soldier at home and abroad. When serving on foreign soil a readjustment of the additional and alternative components is provided for and can readily be made to meet the new surroundings and conditions.

Illustration: The Northern soldier will not thrive on corn meal and bacon, or rice and bacon. The Southern soldier prefers corn bread to wheat bread and does not crave to so great an extent fresh beef. Neither can fight on rice, like the Japanese and Filipino, and thrive.

REQUIREMENTS OF THE IDEAL RATION.

The ration must therefore conform to the needs of the individual soldier as well as the exigencies of the service, and must contain all the alimentary principles in an adaptable form (*i. e.*, 1—carbo-hydrates, 2—fat, 3—protein, and the salts). Carbo-hydrates and protein being principal, and in the proportion of one part of the latter to four or five of the former. Fresh vegetables must be an occasional component to avoid disease and disability of the troops.

- | | | |
|-----------------|---|---|
| Food
value : | { | <ol style="list-style-type: none"> 1. Fresh beef = mainly protein + fat and salts. 2. Bacon = mainly fat + protein and salts. 3. Flour = mainly carbohydrates + fat, protein and salts. 4. Corn meal = mainly carbohydrates \pm fat, protein and salts. 5. Beans = protein, carbohydrates + fat and salts. 6. Rice = mainly carbohydrates. |
|-----------------|---|---|

Corn meal contains all the alimentary principles in better proportions than any other article.

- | | | |
|---|---|---|
| To be on the
part of the
soldier. | { | <ol style="list-style-type: none"> 1. The accustomed diet of the soldier in great part (Adaptability). 2. Agreeable to the taste (Palatability). 3. Portable and light in weight (on the person of the soldier). (Portability.) 4. Of easy and quick preparation (Simplicity). 5. Adapting itself to a change of dietary, (Flexibility). |
| To be on the
part of the
Government : | { | <ol style="list-style-type: none"> 1. Available in quantity. 2. Potential strength, energy for war purposes. 3. Suitable to the circumstances, hygienic. 4. Satisfactory to the consumer. 5. Economy of cost. 6. Conveniently procured, handled, packed and delivered in good condition. 7. Easy preservation (least waste and deterioration). |

Summing the conclusions we find that the ration must meet the following requirements :

1. Adaptation.
2. Palatability,
3. Potentiality,
4. Hygienic,
5. Availability,
6. Portability,
7. Conservation,
8. Accessibility,
9. Simplicity,
10. Economy,
11. Flexibility.

DISCUSSION OF ARTICLES COMPRISING THE RATION.

1. Beef, domestic product, palatable, generally accessible,

great potential energy, easily cooked, perishable, non portable by soldier. When available on the hoof with proper cooling facilities, or by refrigerators, superior to bacon for Northern soldiers.

2. Bacon, domestic product, palatable, very great potential energy, easily cooked, not perishable (wastes in hot countries), economical, readily shipped, handled and stored, portable by the soldier. The universal American "meat."

3. Fish, strong in protein, domestic production, rather perishable, easily cooked, not generally desired, but valuable for a change of diet.

4. Hard bread, concentrated, great potential energy, palatable, simple in use, light, portable on the person, keeps well, cheap, home product, adapted to all classes.

5. Flour, concentrated, great energy, can be used in a variety of ways, accessible, keeps fairly well, cheap, home product, and when in the form of well-cooked soft bread a staple article for all.

6. Corn meal, domestic product, abundant and cheap, concentrated, represents in best proportion all alimentary principles, perishable, easily prepared, but indigestible if not well cooked, adapted to Southern soldiers.

7. Vegetables, fresh, domestic production, palatable, abundant, cheap, very perishable, easily cooked and valuable from an hygienic and gustatory point of view; vegetables, dry, domestic product, keep well, strong in potential energy, portable, but need a great deal of cooking, and under cooking is apt to be the rule, useful in other dishes.

8. Dried fruits, domestic product, cheap, abundant, non-perishable, easily prepared and valuable from the standpoint of hygiene and palatability.

9. Coffee, the best restorative and stimulant. Tea, the second best restorative and perhaps the best for the tropics. Sugar, vinegar, salt, pepper, desirable in order named. Coffee, tea and pepper being the only articles of the ration not a domestic product.

To meet the individual characteristics of our soldier, in his origin the most cosmopolitan found in any army, as well as to provide a change of diet, our ration was made a flexible one

and under the fostering care of company commanders, who take a pride in their kitchens, one may find as liberal and diverse bills of fare as in the homes of an equal number of comfortable mechanics; there is no other army in the world where from the commissariat alone this can be approached.

It would seem that if the U. S. Army ration was sufficiently generous and flexible as to enable an intelligent officer and a good cook to satisfactorily feed a company, nothing more should be required; but this slowly evolved ration has shown that it was adapted to every call that has been made upon it.

When the Subsistence Department first commenced to issue rations to the indigent natives, it sent among other things, flour, vinegar and pepper, which the native hardly knew how to use; later it supplied a ration, approved by the Medical Officers, and perfectly satisfactory to the native, and this was $\frac{1}{2}$ bacon, $\frac{1}{2}$ codfish, $\frac{2}{3}$ beans and $\frac{2}{3}$ rice. A substantial diet, better than his poverty had permitted the native to heretofore enjoy, but not adapted to American taste or capacity.

When the Subsistence Department issued rations to the Mississippi flood sufferers, it issued bacon and corn meal, a substantial diet, satisfactory to those for whom it was intended, but not adapted to the needs of Northern people to whom, when issues have been made, notably Chicago, in 1871, flour has been the principal article; in each case, food that was adapted to the needs of the people has been issued. An examination of our ration and these issues will show that it is flexible enough to meet all these cases; and it may be added, that when the army went to the rescue of the frost-bound miners of Alaska, it could still give satisfaction, and yet keep inside the components of our ration. These issues show a practical flexibility, supple enough for any climate (they cover three zones) and any people (they were to three distinct races with various shadings) not so enervated by luxury as to be unfitted for war.

The flexibility of any ration decreases as it approaches the firing line. In action, the composition of the ration is dominated by military necessity, and here our components of bacon and hard bread, portable, palatable, of great potential energy and needing no preparation, are unequalled.

While, as has been stated, the present ration with its liberal

substitutions and opportunities for savings is almost perfect in quantity, quality and variety, and meets every requirement, a few alternatives and one absolute addition would, it is thought, improve it. The reasons for the additional articles are: It is thought that putting ham in the present ration as an alternative issue is preferable to the present method and really more economical, for the reason that in many places beef costs as much as ham, and in that case the daily issue now authorized might be 12 ounces ham and 8 ounces fresh beef, altogether too much; it meets every requirement.

Canned fresh beef and mutton are added for the reason that no article of the ration keeps better, and there are times when they are the best meat ration that can be obtained, are strong in potential energy, cheap, easily prepared, and with vegetables make a delicious meal.

Brawn is desirable for a change, easily prepared, great potential energy, portable, keeps well, cheap.

Oatmeal, rolled, costs no more than beans, less than rice, and is superior to either in that it contains all the alimentary principles of a complete food in better proportion than either, can be cooked more readily, and can be used as a gruel; in fact, it meets every requirement.

While it is realized that rice is not generally desired by the American soldier, and in large quantities would be injurious to him, it has so much potential energy, is more easily cooked than beans or pease, is wholesome and cheap, the amount is increased.

Hominy is increased for the reason that it is more acceptable to Southern soldiers than either beans or pease; it is wholesome, keeps well, great potential energy, and cooks as easily as beans.

The alternative issue of 8 ounces of red wine, upon the recommendation of the surgeon, in lieu of coffee or tea and sugar, was debated; but all things considered, it was thought best to omit it.

Sugar is increased because there seems to be general demand for it.

Sauerkraut is desirable from an hygienic standpoint, and while the value of the vinegar ration is not fully appreciated,

and its greater use should be encouraged, it is generally in excess of the desires of the soldier, and therefore, sauerkraut is added as a substitutive component.

Curry seems to be desired, and is as valuable from an hygienic standpoint as black pepper.

Tobacco is an actual solace and comfort to at least three-fourths of our soldiers, and should be added. All these articles, save curry, are of domestic production.

(If, as a matter of economy, it is necessary to reduce the cost of this ration, then, and then only, the fresh beef, generally the most expensive component, should be reduced to 18 ounces.)

In this thesis the writer cannot pretend to have evolved a single new idea. Scientific and practical men who loved their profession and having at heart an earnest desire to improve the soldier's ration, which they have often shared, have labored so long upon the subject that there were really no new ideas to present, but it is thought these simple changes will make ours, from the American soldier's point of view, "The Ideal Ration For An Army In The Tropics."

Table "B" presents this ration.

Just A Regular.

19+2.

WAR LESSONS FOR LAYMEN.

BY CAPTAIN A. P. BLOCKSOM, 6TH U. S. CAVALRY.

ALTHOUGH this paper is written more for the benefit of those having no military education, I believe the conclusions maintained will be deemed vital by practical soldiers: they can be summed up in the word "Preparation," and may be of some little purpose at this time, because we are on the eve of important congressional action respecting land and naval forces.

Judging from the present outlook on our insular relations, we shall remain on the imperial highway, call it what you will: our points of contact with the outside world will soon be numberless, bringing with them increased responsibility in the care and protection of new possessions and largely extended commerce. Seeking it however little, we shall have to be on guard against corresponding trouble with foreign nations.

In the consideration of such trouble, sea power is most important as a preventive, and we should add both material and men to our navy, resting assured that money for the purpose will be well spent; if this be done and evils of administration now so evidently existing through defective laws be eradicated, the chance for conflict with dangerous rivals will be reduced to the minimum.

In its effect on the people military power is generally more apparent and for pure defense perhaps more important than sea power; until the time of universal peace we shall often have to fall back upon it.

Being familiar with military matters, I shall relate some experiences of the Spanish-American War and try to show how we may better prepare for future wars without prejudice to long held ideas on militarism.

There was much confusion and delay in organization at the outbreak of the war and later on, due chiefly to two causes in existence before war began; lack of transportation and supply,

and deficiency of trained officers, staff and line, for, a largely increased force. The anomalous position of the Commanding General of the army was also a contributory cause. All these had their origin in defective congressional legislation.

Let us consider the first, and take for a text the saying attributed to General Fremont, "War is not so much a matter of battles as of transportation and supply." His epigram means that an army spends most of its time in the work of transportation and supply; that other things being equal, it is superior in discipline, morale and physical effective to a poorly equipped enemy, outmarches and outmanœuvres it, and *as a consequence* wins the decisive battle, if one is necessary.

The word "supply" in this paper means every kind of war material.

At our points of concentration in the spring and summer of 1898 there was a marked deficiency of supplies and improper handling of troops and supplies during and immediately after railroad transportation.

Some of our Regular recruits had never fired a ball cartridge from a carbine or received complete uniforms when we left Tampa Bay for Santiago, nearly two months after the declaration of war, although only a few of the most apt were taken to fill the quota for each organization. It was fortunate that the army of invasion was made up almost entirely of Regulars who were practiced shots.

Admitting the occasional value of "irregular" troops, the lack of uniforms is a serious drawback where haste is required; recruits can be "whipped" into shape in much shorter time when uniformed, because they feel from the beginning they are soldiers and that officers and non-commissioned officers recognize them as such.

It must be remembered that at Chickamauga and Tampa the Regulars nearly doubled their numerical strength by the addition of recruits.

In training them we had at first to borrow everything necessary for the drill, which caused loss of time for all and great dissatisfaction among the older soldiers, who prize their own horses and equipments and keep them in good order. Of course, recruits were not so careful, and their ardor was often

cooled by sarcastic criticism : when he tries an old soldier can make a recruit feel very small and homesick. But when material circumstances are favorable, the change from a citizen to a soldier is remarkably quick : modern conditions do not require discipline so severe or drill so long continued as in the days of rigid lines and automatic movements.

As for food and shelter, there never was any real lack of them among the Regulars except for a short time in Cuba, when the exigency of war demanded quick action without impedimenta. Some of the food deteriorated in that hot moist climate and some of it may have been originally bad, but from observation and inquiry I find our men suffered very little on that account. It was a new thing for us of this generation to campaign in the tropics, and we learned by experience, but coffee, hard tack and bacon always tasted good to a hungry soldier.

The clothing was not suited to the climate, but it caused discomfort only, so far as I have learned.

I have heard of a deficiency in medical supplies, but believe it was rather in the number of medical officers to administer them, especially at San Juan and El Caney, where those officers were very greatly overworked.

We were deficient there in mounted cavalry for scouting purposes, field guns and smokeless powder, modern rifles among the volunteers, and other munitions of war, but were fortunate both in the character and number of troops opposed.

The improper handling of supplies in the United States was due in some measure to the insufficiency of transportation. Railroads were plentiful, although their switching facilities at points of unloading were not always good. As to wagons and mules, some were sent from army posts and others were hired and bought as soon as possible, but it was some time before a sufficient number could be obtained, because enough staff officers to buy them were not immediately available.

There was very little transportation of any kind in Cuba, owing to the want of room in the ships carrying us over : we of the cavalry left our horses. There was no complaint : we accepted the inevitable and cheerfully carried from fifty to seventy pounds up and down mountains, while the thermometer

was above a hundred in the shade and the air full of moisture. It annoyed some of the men, however, when an infantry aide-de-camp rode by our column on a cavalryman's horse and said we were doughboys.

It is well to say here that the civilian packers did wonderful work from the time we landed; day and night they kept loaded mules going over the roughest trails, and had they not possessed almost superhuman strength and endurance, the army would often have gone to bed hungry.

The insufficiency itself of transportation was never so great as that of other supplies, except in the transport system at the beginning of the war.

With regard to improper handling of supplies: trainloads were often sidetracked while on the way, and others were really on hand when badly needed, the officers to whom sent not being aware of their arrival. The trouble was probably with both military authorities and railroads. A large number of experienced officers and assistants is needed for work of such magnitude, also competent and reliable men to go with the most important consignments, to see that they reach their destination on time and are turned over to the proper officials.

In the handling of troops on railroads there was ample room for improvement. The men were overcrowded, and uncomfortable in other ways. Due care was not always taken to prevent simultaneous arrival of different bodies of troops at the same points of concentration. It may be the fault was occasionally with military authorities: more often it was with the railroads, which delayed troops on the way. In either case switching facilities and wagon transportation were inadequate. Troops were sometimes from twelve to twenty-four hours getting away from stations, and it is a fact worthy of note that soldiers are more apt to be disorderly and hard to control there than at other places. An examination of the newspapers of that time will show the majority of crimes and disorders in the army to have been committed around railroad stations.

The railroads were not altogether to blame for the delays, since the Government did not compel them to fulfill their contracts as to the time limit.

In the transport service the errors and discomforts were

principally due to an insufficient number of ships carrying troops and supplies. The men suffered much from lack of ventilation and uncleanness caused by overcrowding. The ship captains often failed to do what was desired by military commanders, the latter accepting excuses because ignorant of marine affairs. Stewards robbed both officers and men by exorbitant prices, and crews rarely failed to be surly and obstructive to soldiers, whom they seem to regard as natural enemies.

Commanding officers could stop many such annoyances at their first appearance by the application of wholesome discipline, especially to ship captains, who are in reality their source, through either indifference or ill will. But the best judgment is that the navigation of all transports should be turned over to the Navy Department.

If Regulars had so much difficulty, how much worse must circumstances have been with volunteers, who had comparatively few officers and non-commissioned officers knowing enough about military procedure to "skirmish" for supplies, to instruct their men how to take care of and cook field rations, etc. ?

On that account, together with the lack of equipment and knowledge of field sanitation, they suffered where Regulars only felt discomfort. Consider also their ancient arms, with which they could never have been effective against a modern, wide-awake foe, even after they became well drilled and disciplined. I have conversed with many volunteer privates since the war, and they all remembered those things. A chief quartermaster of one of the Southern camps, himself a private and officer of volunteers in the Civil War, said to me not long ago while discussing the volunteers of 1898, "It was the same old mob we had in 1861; they didn't even know how to cook beans; they made requisitions for clothing on stationery blanks, and damned the quartermaster for not issuing on them, etc."

In the face of these facts it seems evident that the first and greatest source of confusion and delay was the unanticipated demand upon our small staff to furnish immense quantities of supplies of every kind on short notice, and to send them with rapidity to many points.

The difficulties of the supply departments will be better ap-

preciated if we know that it takes a long time to make what are technically termed "munitions of war."

For the future the remedy is easy. There should always be a permanent surplus of war material, sufficient say for an increase of one hundred and fifty thousand men. It can be kept on hand with little addition to the first cost, the army and National Guard already in existence using part of it each year, to be replaced from their yearly appropriations, thus preventing it from becoming obsolete or useless through decay. If the organizations of the Regular army retain their present strength, the surplus will be more easily kept in shape. These remarks do not apply to subsistence stores, many articles of clothing, forage, and perhaps mules for wagon transportation; the first mentioned are too perishable, and all can be procured in this country on shorter notice than other military supplies.

The Regular army staff, especially in the supply departments, must be increased accordingly, in order to properly handle both troops and supplies when new armies are raised.

Concerning the deficiency of trained officers of the line and other departments of the staff: at the beginning of the Spanish War all departments of the Regular army were weakened by appointments of officers to higher positions in the volunteers, quite a number of troops and companies in the Cuban invasion having with them one officer only. Many appointees to the volunteer staff were unfamiliar with their new duties, particularly those from civil life. The fault was not in the selections themselves, but in the system which made them necessary on such short notice. General officers did not have a large enough staff, particularly competent aides. There was no trouble so far as the internal management of old regiments was concerned; it was in new brigades, divisions, etc.

In matters of transportation, in setting marching columns in motion at proper times, in camping large bodies of men, in proper distribution of advance guards and outposts and in making dispositions on the battle-field, a general officer to-day can hardly have too large a staff, each member with thorough knowledge of his duties and the moral and mental characteristics of his chief.

The later plan of selecting Regulars and men of experience

in former wars only for general and field officers of volunteers raised directly by the Government, gives better results than any other : In case of Regulars the selection should be made as far as possible by seniority ; if an officer is not fit to command volunteers he is not fit to command Regulars and should be retired. Of course the order of selection may be broken where officers have shown signal ability or skill and courage in the field, but not without careful investigation ; *nearly every officer* on the island of Cuba during the Santiago campaign was recommended for brevet or advancement of some kind.

We know the splendid work our volunteers have done in the past, but they would have been fit for war much sooner in all cases had their field officers seen previous service.

It is a popular idea that the Regular is rough and rude to volunteers ; in reality he is generally even tempered though firm, and gains his ends more by persistence than rough treatment. Volunteers soon learn that he has real solicitude for their welfare and knows how to take care of them in every situation.

Will not the method indicated above give a much better general average than the usual one of selection through political or personal influence ? Should officers of war service be commanded by men " who never set a squadron in the field " ?

War is business, and the brigades, divisions and corps of the volunteer army may be likened to branch houses of a central business concern. Does the manager place tyros in the new positions of trust and responsibility ? No, he selects tried employés from the old house and places his raw material at the bottom.

It is probable that the earlier reverses of the English army in South Africa were due in a measure to the too high position of some of its raw material.

With their poor armament and inexperienced officers, could our volunteers of the Spanish War have done better ?

Weakness in the above mentioned respects can be avoided in future by a large increase in the staff of the Regular army, as already indicated, and by a surplus of comparatively young officers of the line for field officers of volunteers when occasion arises for them. The increase of the staff will enable its

younger officers to come into closer contact with the line, and the surplus of line officers will be so in name only, because of detachments to army and State headquarters, colleges, recruiting stations, etc.

It may be expedient to first call the "National Guard" into the United States service, especially if quick action against an aggressive enemy is desired. The same necessities confront us; warning has been given in the predicament of the 71st New York before San Juan. Congress should make liberal appropriations for furnishing the National Guard with modern arms and equipments and facilities for annual field service with Regulars. Having a natural military bent they soon develop into the finest soldiers. In active service their general and higher staff officers should be Regulars and officers of former wars, the surplus advocated above permitting such a disposition.

If Congress decides what requirements of the War Department shall be fulfilled by each State before receiving its share of appropriations, the States will do the rest.

If the quick and *unrestricted* use of additional organized troops is desired, cannot laws allow members of the National Guard to be mustered into the United States service, with the understanding that their regimental organizations shall remain practically intact? In what other way can we raise volunteers to take the field inside of twenty days?

The argument on this part of the subject can be well illustrated by the success of the Boers in South Africa. During the past three or four years they spent millions of money in war material alone: their senior officers, line, and staff are of acknowledged experience and scientific ability, but at the beginning of the war the men behind the guns were no better than a hundred thousand or more who would answer the first call to arms in this country; and unlike the Boers *we* have the reserve power to back them up.

Let us glance at the third source of trouble mentioned in the beginning. During the Spanish War there was much friction in the War Department, owing to the fact that the Adjutant General was Chief of Staff to the Secretary of War instead of the Commanding General. The consequent conflict of authority is really of much older date and can only be remedied

by a change in the law. The newspapers showed fully our weakness in this respect: in the matter of food and other supplies, sanitation, etc., they greatly magnified evils, but enough truth was told to show Congress where the remedy lies—in the subordination of the heads of staff departments to a military chief.

I believe the remedy has been suggested of merging the offices of Commanding General and Adjutant General into one and calling it "Chief of Staff," this chief of staff to be chosen from the general officers of the army, assigned by order with commensurate rank and relieved when not in accord with the Secretary of War.

To conclude and to reiterate.

Think how well the saying of General Fremont applies to the situation in South Africa. We cannot afford to procrastinate in the light of new conditions. It seems to me folly to reduce the Regular army from its present strength of sixty-five thousand; it is questionable whether that number will be sufficient for future needs. There may be many reforms necessary, such as change in administration of the staff, putting staff and line into more intimate connection, reorganization of certain branches of the line, a system of expansion, etc.

But *first* we want a surplus of war material and experienced officers, with a staff of sufficient business capacity to put them in the right place for volunteers when war comes.

However near perfection the Regular army itself may be, if the latter requirements are unfulfilled it will not be a proper nucleus, and in the next war we shall pass through the same old trouble, and *worse*, for our opponents will not be Spaniards or Filipinos.

PROPOSED REORGANIZATION FOR OUR CENTRAL STAFF.

BY CAPTAIN HENRY T. ALLEN, SIXTH U. S. CAVALRY.

SINCE 1871, a great deal has been written and said about the general staff, great general staff, neben etat, general staff serving with troops, etc., until a confusing picture remains concerning an institution which, in theory at least, is essentially simple and one that can be adapted to our system without any radical legislation or marked change of existing bureaus. The main objects of any staff are carefully to work out and harmonize under its chief all the elements that enter into the maintenance and operations of troops to which it belongs, and to issue the necessary orders of execution. In the case of the army the staff ramifications are numerous, yet easily capable of being conveniently grouped. Therefore with a view of coördinating the work of the army in its most general sense, and of bringing about a reorganization of its directing sources, so as to meet the demands of modern military usage, the following change in the Adjutant General's Department is suggested :

It will be seen that instead of adopting the terms, general staff, and chief of general staff, the words, Adjutant General's Department and Adjutant General, are retained. This department as now organized effects much of the work of the general staff of modern armies, and by its nature lends itself to such a reorganization and transformation, as will bring about the results that are urgently required and generally conceded necessary.

Excepting its initiative in the domain of personnel and within the limits of the military information division, this department might now well be described as the *clearing house* for the paper work of the army. The object of the change is to surround the Adjutant General with such technical and professional advisory sections or committees, as will enable him or the department to know with accuracy in advance, all the details necessary for the successful execution of any military

measure ; in a word *to render this department the clearing house also for all plans and projects intended to be utilized by the army, both theoretically and practically.*

It will be noticed that no change is contemplated in the chiefs of bureaus, as they now exist, except as regards the Adjutant General. Orders will be issued to them through the Adjutant General's Department as in the past ; but with this difference, that the subject matter will be first clearly digested by said department. For example, if it be necessary to construct a fortification on a given island, section 8 (armament, fortifications, and construction) would adjust the plans of the different bureaus, so that the guns, defensive works, barracks and quarters would be adjusted to the plot, and each to the other. The work would be harmonized before the order was issued, and each bureau chief would be given in a defined way his part of the problem. From this it is clear that section 8 should have representatives with previous service in the Engineers, Artillery, Ordnance and Quartermaster's Department. For the construction of stables, the chief of the cavalry (artillery), section (s), should be added to this section.

Again, if it be required to supply, equip and despatch a given force to a certain point, all the details would be worked out by section 5, which would therefore require officers with experience in each of the departments involved. Eventually there should be sufficient professional and technical information in the various sections and archives of the department to solve all military problems that might arise. The orders would be issued accordingly, and such failures to connect as have occurred in the past, in spite of all good will, should be eliminated.

Section 3 would be entrusted, among other duties, with the preparation of possible and hypothetical campaigns, the selection of military problems for manœuvres, and the outlining of practical military work at service and other schools ; and, in conjunction with the staffs of these schools would determine changes in their curricula necessary to meet all requirements.

The heads of sections 9 and 10 should be especially skilled in their respective branches, and the sections themselves should be capable of analyzing and digesting all professional and technical questions relating to the artillery and cavalry.

No change is contemplated in (section 6) the pension division as it now exists, other than its incorporation in the department.

To enable the department to obtain the officers best qualified for the exacting positions that would thus be formed in the various sections, there should be no limitation as to branch of service, or as to staff and line in their appointment or detail to the department. The limitations should be only those of capacity, experience, and special fitness.

The following classification shows in a general way the work that would fall in the domain of the Adjutant General's Department.

- | | | |
|------------|---|---|
| SECTION 1. | { Personnel
and
Orders. | { Promotions.
Appointments.
Records. |
| SECTION 2. | { Mustering
and
Recruiting. | |
| SECTION 3. | { Militia,
Military Instruction,
Campaigns, and Military
Problems. | { West Point.
Willet's Point.
Fort Monroe.
Fort Leavenworth.
Fort Riley and
other schools. |
| SECTION 4. | { Maps,
Military history and Records,
Publications. | |
| SECTION 5. | Supply { Rations,
Forage,
Arms,
Clothing,
Equipment, etc. | |
| | Transportation { Land,
Sea. | |
| SECTION 6. | Pensions. | |
| SECTION 7. | Foreign Armies { Military
Statistics,
and Information. | |
| SECTION 8. | Armament, Fortifications and Construction. | |

SECTION 9. Artillery.

SECTION 10. Cavalry.

PROPOSED ACT.

The Adjutant General's Department shall be charged with and have supervision over the following duties and subjects:—the personnel of the army—commissioned and enlisted—its appointments, promotions, and records; mustering and recruiting; militia, military instruction, all service schools and other military schools, campaigns, and military problems; maps, military history, records and publications; study of questions of supplies, arms, clothing, equipment, etc.; the solution of problems of transportation by land and sea; all work connected with pensions; military statistics and information concerning foreign armies; recommendation as to action on plans of armament, fortifications, and military constructions, their kinds and dimensions; investigation of fundamental questions relating to the employment and distribution of field, coast, and siege artillery; and to various questions pertaining especially to the cavalry service.

The department shall be divided into a suitable number of sections or advisory committees, to which the above duties and subjects will be assigned.

The Adjutant General's Department shall consist of one major general, two brigadier generals, five colonels, eight lieutenant colonels, ten majors, and ten captains.

Vacancies in the grades of major generals and brigadier generals shall be filled by the President. Vacancies in all the other grades shall be filled by examinations to be made by boards of officers, preferably of the Adjutant General's Department, under such instructions as the President may direct, from officers of the army having the same grade or next lower grade than that of the vacancy to be filled; this not to interfere with the advancement of the present Regular officers of the Adjutant General's Department to original vacancies.

All officers below the grade of colonel, for each three years' service in the department after the passage of this act, shall serve one year in such branch of the line as the Commanding General may direct.

All the work of the Adjutant General's Department shall be carried out under the Commanding General in accordance with instructions from the Secretary of War.

All laws or parts of laws conflicting with the provisions of this act are hereby repealed.

PUERTO RICO.

BY MAJOR F. W. MANSFIELD, 11TH U. S. INFANTRY.

PUERTO RICO, is a part of what was evidently a mountain range, of which Santo Domingo and Cuba to the west, and Santa Cruz and the other islands to the east and south-east, are also parts. The island has an area of about 3500 square miles, and is about the size of Connecticut. The Coast and Geodetic Surveyors are now at work and it is probable that new maps, soon to be published, will show that the island has a somewhat different shape from that shown on the present maps. The interior of the island is very mountainous. The main range of mountains runs directly across the island on a nearly east and west line, and somewhat nearer the southern coast than the northern. This range has an altitude of from 1000 to 3000 feet, with peaks rising in places to 3600 feet. On either side of this range are smaller ranges and hills. These latter are broken up into many valleys, through which flow to the sea numerous streams and rivers. These are larger, but less frequent on the northern than on the southern side. On top of the main range of mountains, in places where the altitude is least, there are small plateaus interspersed with valleys. It may be that in earlier days there were extensive forests on the island, but at present there are none. Such forests as exist, are of small extent and contain very few trees of original growth. Many of the mountain sides and hills are entirely bare; others are covered with trees of second growth. What seems at times to be a small forest, is really a coffee plan-

tation, where most of the trees, usually those of quick growth, have been planted to furnish shade for the coffee bushes. There are so many varieties of trees that it would be difficult to name them all in an ordinary paper of this sort. They are, however, most all of the hardwood kind. The principal ones are the mango, the various palms,—cocoa-nut, royal, corosa, date, etc., aceitillo (satin wood), tachuela, cedar, Indian-wood, breadfruit tree. Others are the mahogany, India-rubber, etc. All along the coast (with few exceptions) the land is more or less low, gradually rising toward the mountains, which are from two to five miles from the sea on the south coast, and five to ten miles on the north. The mountains are more abrupt and the lowlands more decidedly flat on the southern side of the island than on the northern. The streams all appear more or less insignificant during the dry season ; but the volume of water in them increases as the rainy season approaches, and when the rains are heavy they often become torrents, flooding the surrounding country and doing immense damage to life and property, as was the case in and about this town last August (1899). There are comparatively few good harbors, considering the extent of coast line ; but there are many open roadsteads, such as the one at Ponce, at Mayaguez, at Aguadilla, Humacao, etc. There is a fairly good harbor at San Juan and at Guayanilla, and excellent ones at Guanica, at Arroyo and at Jobos. The one at Guanica is small, but completely land-locked, and the one at San Juan nearly so. The largest town on the island is Ponce. It has about 45,000 (or more) inhabitants. San Juan is next, Mayaguez next, and Arecibo, Aguadilla, Guayama, Humacao, follow in order of importance. All are coast towns. Lares is the largest interior town, and is up in the mountains of the north-west part of the island, as Aibonito is in the east. Cayey, Caguas and Rio Piedras are on the military road from this town to San Juan. Mayaguez, the prettiest and cleanest town on the island, is in the extreme west, and Humacao is in the extreme east. Aguadilla, a quaint old town, where I spent ten months, is about twenty-five miles north of Mayaguez, at the terminus of one of the sections of the French railroad, to be completed around the island some day. Arecibo is on the north coast, about fifty-five miles west of San Juan, and at the terminus of

another section of the above mentioned railroad. San Juan, the capital, is on the north coast. It was formerly a walled town. It is built on an island, every foot of space on it being occupied, so that there can be no extension of the town, except by the annexation of outlying towns and villages on the mainland. Of these Santurce is the principal one. It is a pretty place three or four miles south of San Juan, and is inhabited chiefly by Americans and foreigners. Bayamon is another town five or six miles from San Juan. It is prettily located at the foot of some mountains south of San Juan, but more perhaps to the west than south.

All towns are about alike. The central building being a church fronting a square plaza. There is only one church in each town, except San Juan, where there are several. All are Roman Catholic. In San Juan there are now several Protestant Missions—Lutheran, Christian, Episcopal and Methodist. In Ponce there is a United Brethren Mission, an English Episcopal Mission, and a Southern Baptist Mission. In Mayaguez there is a Presbyterian Mission. I know of no others on the island. All the church buildings are alike, with slight variations of the same general style.

There is a section of the French railroad, about 23 miles long, running from Ponce to Yauco, quite a large town west of Ponce, of which Guanica is the seaport, 6 miles distant from it. There are no other railroads than the three sections of the railroad above mentioned.

The only wagon road of any consequence that is complete in every way, is the military road from here to San Juan, with a branch from Cayey to Guayama. The distance from Ponce to San Juan over this road, from sea to sea, is eighty-three miles (134 kilometers) though the air line distance is only forty to forty-five miles. The military road is a fine piece of engineering, and has easy grades. It is very smooth and similar to the drives leading to private places around New York. A drive over this road in a carriage is a great pleasure. The road was somewhat injured in a few places by the storm of August 8, 1899, but is being put in order again. Leading out for 8 or 10 miles from each town (large) are several good roads. A great deal of money is now being spent to finish and connect these

roads and to make them as nearly as possible like the military road. It is expected that they will be completed in about a year or 18 months. Their completion will reduce the cost of transportation of coffee and tobacco from the interior to the coast from one-third to one-half; because wagons and carts can then be used at all seasons instead of pack animals, which are expensive. The dirt roads and trails, of which there are many, are mostly impassable for vehicles at any time, and almost so for anything but a man in the wet season.

Most of the seacoast towns have a port (or playa) where ships dock, and most of the wholesale business is done. The playa is anywhere from 1 to 6 miles from the town proper, except at San Juan and Aguadilla. Those are on the coast. Here at Ponce the playa is $2\frac{1}{2}$ miles from the city.

Most all the lowlands are used for sugar plantations, though there are some patches here and there of tobacco, pine-apples, sweet potatoes and beans. At Ponce there is quite a wide plain of considerable extent, used almost entirely for sugar-cane. There are more sugar plantations about Ponce than anywhere on the island; in fact, nearly double the number of acres of any other district. Mayaguez, San Juan and Utuado (an interior town) districts have many sugar plantations also. The plantations vary in size; but in the centre, or near it, of each, stands a sugar mill and its attendant—a rum distillery. Some of these sugar mills have modern machinery, but only a few, and most of them have the old fashioned kind. None of them are well kept.

Pine-apples and cocoanuts grow best in the Mayaguez district; though many also grow in the Humacao (eastern) district. oranges grow best among the foot hills. They do not seem to be cultivated. Seeds are dropped anywhere, and the orange trees grow and flourish. The oranges are the best I have ever eaten, possessing a high flavor and being very sweet. Lemons are mostly of a small variety, similar to limes. Both limes and lemons are plentiful. Tamarinds are also in abundance, and a very refreshing drink is made from them. There are a few dates, but not many. The date palm seems to grow most everywhere, if planted. Bananas grow well most everywhere, but flourish best in the mountains, where the plants grow to a

large size. They are generally used to shade the coffee bushes before the shade trees grow to sufficient size to answer that purpose.

When coffee bushes are planted, they require about the same number of shade trees and banana plants as there are coffee plants. The banana plants are taken out in a year, or two, and then the shade trees are thinned out as they grow larger. Along all, or most all, the slopes of the mountain valleys are the coffee plantations. Wherever a man can stand there coffee is planted. It grows best in the mountains, where the disintegrated volcanic rock forms a soil particularly well adapted for it. Then too, coffee requires shade to do well. A glance at a coffee plantation gives one an idea of a wild, uncared for, thicket of underbrush and trees, with here and there a lot of banana plants. The ground is completely hidden from view; and one may hear, in the bottom of a deep ravine, or valley, the babbling of a brook, but it is only at long intervals that one can see it. Once in a while a hill more barren than others has a patch of corn or tobacco on it, or may be some beans. Then again, a piece of lowland, at the bottom of the valley where it may widen, is seen a sugar plantation, or a rice field.

Considerable rice is raised on the island, mostly in the interior, and of the upland variety. Tobacco, like coffee, does best on the mountain sides; though much is raised along the coast; but the mountain tobacco is of the best quality. There are innumerable fruits and vegetables unknown to us, that seem to grow wild. Some of them are excellent, but many of them are not liked by Americans. There is not a thing on earth that I ever heard of that will not grow here with proper cultivation, and not much labor required. There is no reason why all the vegetables of the temperate zone should not be raised here. Some of them are, such as tomatoes, cucumbers, egg-plants, lettuce and radishes; and of course, several varieties of sweet potatoes; all similar to our own, but not of the best varieties. Onions and Irish potatoes are sometimes raised, but owing to the damp climate, they require more care; the people prefer to pay an exorbitant price for those that are imported. Consequently large quantities of onions, Irish potatoes and garlic are brought from Spain and France, and sold for 3 cents a

pound American money. Yet they could be raised and sold here at a profit for $\frac{1}{4}$ or $\frac{1}{2}$ cent a pound. Melons are raised but not of a good variety. There is no reason why excellent cantaloupes, nutmeg and citron melons should not be raised in large quantities. The trouble is that the people have not been taught how to do anything and must be educated in order to be able to live at less expense. Yams, sweet potatoes and such things grow without care; also beans and bananas; and those are the chief articles of diet of the masses.

In the towns the chief building materials are brick, lumber and concrete. If brick or concrete is used, it is most always stuccoed. When frame houses are constructed they are usually built on top of a brick or concrete wall from two to six feet above the ground, if the houses are for the better classes, and on a level with the street if for the lower classes. If a house is two stories high, the better class families live on the second floor while the lower story is occupied as a store, or by a poor family. The houses of the better class usually have the same general plan, not often varied from. There are no hallways. One is ushered from the street or stairway into the main sitting-room in the front of the house, on either side of which are two or three bedrooms, opening into it. The dining-room is usually directly back of, and really a part of the sitting room; sometimes it is in another part of the building. Extending from one side there is an "L," in which the storerooms, kitchen, bathroom (if there is one) and sometimes the dining room are located—all opening on a balcony, usually enclosed with slats.

The peons, and other poor people, live almost anywhere—generally on the edge of the town in little one, two and rarely three, room cabins, with no yards or garden. These cabins are of the kind occupied by the *jibaros* (peasants) in the country districts. They are constructed of boards with a palm bark roof, or of poles 2 to 4 inches thick, tied together with thongs, and covered with palm bark. As far as the eye can reach the hillsides and mountains slopes are dotted with these little cabins. Now and then the neat dwelling of the planter may be seen, sometimes with a red roof, standing among the trees and bushes of a coffee plantation. The cabins and dwelling are often completely hidden among the banana plants and under-

brush. The houses of the better classes only as a rule have doors and windows. The doorways and window sills are the same as elsewhere, but in Puerto Rico there are no doors and window sashes as we know them. Everything of the kind is a screen or shutter of slats. It is a rare thing indeed to see window glass anywhere. The slat doors have inside light shutters. When the rain is hard and beats in, these must be closed, and then the room becomes dark. Sometimes there are small apertures, through which light may enter. What the general style of architecture here may be called, I do not know. I suppose the brick dwellings are nearer the Moorish style than any other. The census of the island, taken about three months ago, shows a population of 947,000, or about 270 to the square mile. This population may be divided as follows: 1. The aborigines or Indians. I do not believe there are any of the pure-blood here now. If there are, they have completely lost their identity. There are many people, however, who are the direct descendants of Indians, through mixture with pure-blooded Spaniards, and have no other than Spanish and Indian blood in their veins. These people and their descendants,—that is all who have no negro blood in their veins,—are called white. Their complexion is dark, somewhat like light-colored mulattos—with whom one is apt at first to class them. They have straight hair and clear-cut features, however, and are mostly in the peasant and artisan class, though quite often one will meet them among the wealthy and well-to-do.

2. The mulattos, quadroons, octoroons, etc., of all shades and color—including red-haired and light-haired negroes—all in fact having negro blood in their veins—from half-breeds to those having perhaps only $\frac{1}{8}$ negro blood. These can always be known by some distinctively negro trait—sometimes kinky hair of the slightest degree—sometimes thick lips, flat noses, large, flat feet, etc. Sometimes the mixed blood is so slight that it is not easy to detect it at once, but close observation will discover it. I do not call any of the people in this class white, whatever their complexion may be. I do not know just how this class of people will be considered by the census authorities, as no reports have yet been published. They are found in all occupations.

3. The full-blooded negro. Of these there are known to be 240,000 or thereabouts—ex-slaves (Spanish speaking), with a large number of blacks (English speaking), who have emigrated from the other islands hereabouts. These people are more or less shiftless and lazy. They possess both traits to a greater degree than our Southern negroes. They are mostly found in the laboring class, ox-drivers, etc.

4. Foreigners. Of these the largest number are French Corsicans. There are quite a number of Syrians, and a few English, Germans, *et cetera*. The Corsicans are largely coffee-plantation owners and many are wealthy. A large number of them have become Americans. The Germans are mostly merchants, and successful at that. All these, unless it be the Syrians, may be classed as white.

5. The Puerto Ricans of pure white blood, who have been born in Puerto Rico, but whose great-grandparents, grandparents, or parents, were pure-blooded Spaniards, and the Spaniards. This entire class will not include, I think, more than 15 per cent. of the population; but it includes the largest number of the wealthy and influential classes; not all of the most substantial and honest, however.

The most complete census of the island was taken by the Spaniards in 1887. Another was taken in 1897. I have seen neither but have read extracts from both. I cannot find that in either are the distinctions as finely drawn as I have made them, between the different elements of the population.

Of the entire population, only 12 or 13 per cent can read or write. The percentage is, of course, much greater in the coast towns than elsewhere, because of greater educational facilities. The country districts and towns are much worse off in the way of schools, etc., than those of the coast, and the latter are badly supplied. In the country districts I think that not over 5 per cent. of the people can read or write. Education, as we understand it, is an unknown quantity on this island, or was till within the last year. Some American teachers have been brought over and distributed among the different towns, so that nearly every town (there are about seventy-five) has at least one. There are six in Ponce. Most of these teachers are young women. Those in Ponce come from the vicinity of Wheeling, W. Virginia.

The conditions are such that much cannot be done until proper buildings are constructed, and the supplies necessary for the conduct of schools are provided—such as desks, maps, etc. This island, if it is unhealthy at times is rendered so by a lack of knowledge of the principles of hygiene and sanitation, and not because of the climate. Between the intense desire for “gold” on the one side, and the ignorance of the masses on the other, no one under the old régime appears to have ever given the subjects named more than a passing thought. But they should be a part of every one’s education. I know nothing of the teachers’ capabilities, but those here seem to be doing good work, and it is by no means easy, especially with such facilities as they possess. Owing to the totally different ideas of social life prevailing here from those in the United States, such work must be particularly hard ; especially so in the small towns, where a teacher finds herself often about the only person speaking the English language. When the American occupation began there were a few so-called public schools, and some private schools ; but very few school buildings. None, such as children in the United States enjoy. There has been no increase of school buildings, but the schools have improved—that is, the public schools. There is no law regulating the attendance at schools, so children seem to go or not as they happen to feel. An American school has been started in Ponce with a large attendance ; in fact, half the applicants have to be turned away. This is a public school on the American plan. The building is rented, but is an ordinary one, wholly inadequate for the purpose. There are several native public schools and some private ones ; but a large percentage of the children do not go to school at all. However, there is a great desire to learn, to get ahead in life. It was practically impossible for poor people to better their condition under the old régime. The children of the better classes go to private schools. Education seems to have been regarded as a necessary evil, rather than a blessing, and therefore any money spent for it was regarded as thrown away. Some people here have not gotten over the idea yet. The general public fared badly as to education, and do still. The children of whatever color, are bright, intelligent and clever. They learn quickly in the American way if given an opportunity ; and further, they will

become the substantial people of the island ready to adopt modern methods.

But educational and other matters must be kept strictly in American hands for several years to come, or the island will retrograde. When civil government comes, as it must soon, great care must be taken that competent Americans are put into office ; men of integrity, honesty and morality, as well as men possessed with great patience. The military government has been so mild that I doubt if any civil government can be more so. If natives are put in complete control now the island will soon be worse than it was under the Spaniards, for the natives want to do just what the Spaniards did ; and more, with themselves in place of the Spaniards. They were educated in Spanish methods and have not yet learned others. Our people at home do not fully understand this, and would be quite surprised at some of the native ideas of liberty. Meantime, the natives must be allowed participation in the government, and have complete autonomy in local government. The latter they really have already, more, in fact, than in many places in the United States. In this way they will gradually be taught *self*-government, so that after a while they can be given complete control. Mr. Foraker's bill comes as near my idea as any I know of. Civil government will, or ought to be all right, but if any one in the United States, except a native, thinks that these people know anything about, or are fit for self-government as we understand it, he is very near being an ignoramus. I have read many statements to the effect that "Puerto Rico is ripe for self-government." My answer is : according to "Spanish methods," yes ; according to American ideas, no. Fully 80 per cent. of the people are ignorant. The percentage is greater than that in the country districts, and much less in those near the coast ; but is too large everywhere. As I have said, the people are ready and anxious to learn, if they have the opportunity. Now, there is another side of this question. There is (tacitly understood) a kind of oligarchy on this island, made up of those who held high office (and their friends) under the Spanish government (natives, I mean). The members of this oligarchy, composed for the most part as I have stated, had many privileges not granted to the masses. Of course, the American occupation

not only put them out of office, but took away their privileges; so they are resentful, especially as they see everyone enjoying the privileges they considered entirely their own. The oligarchy does not care to have the masses educated, because they would in time perhaps have positions equal to their own, and all the privileges its members have always enjoyed. Everyone will not notice the existence of such an oligarchy, but it does exist and a close observer will know of it; and will know too that its inspiration is opposition to change; an opposition not uncommon in some parts of the United States.

Religion, as we understand it, is practically unknown, but there are many good and benevolent men and women. The Catholic Church here is not, or rather has not been quite the same as in the United States. It certainly has not been as progressive or active. That may be due to the fact that there has been no other church or mission on the island until recently, and the other fact, that it was supported by the government, and the priests were Spanish officials. Much has been said about the priests and their actions, which may or may not be true, but I have seen nothing more concerning them than I have noticed elsewhere. Doubtless the system was at fault in church matters as it was in civil.

Be that as it may, it is perfectly evident to even a comparatively ignorant person that the moral education of the people has been entirely neglected. I cannot see that there is much difference between the views of the educated and those of the ignorant on the subject of morality. There is a difference, though slight, in the methods of putting their ideas into execution. The immoral relations of men and women that exist to such a large extent on the island are perhaps largely excusable, in very many cases, especially among the poor, for it is stated that the cost of a marriage license, the priest's fee, and other expenses were formerly so great that marriage, according to law, was practically impossible for the ordinarily poor man, for the marriage ceremony had to be performed by a priest or not at all, as civil marriages were not allowed as they are now. As I know what ordinary laborers received when the Americans arrived and the wages they receive now, I am not surprised that so many were married according to nature instead of ac-

cording to law. There are whole families living as though married legally, and they have been so living for years. Others have taken advantage of the authority recently granted, and have had the civil authorities marry them. This class is the excusable one. The non-excusable are the legally married, who also have concubines. There are a great many who have right ideas on such subjects and live accordingly. Where morality is so lightly considered as a result of so many years of neglect of moral training the effect is of necessity bad, especially on the young. The poor, though, are the greatest sufferers, because their enforced method of living tends toward just such a result. Under such circumstances immorality becomes a matter of ordinary everyday life.

The natives are a wonderfully temperate people; temperate in eating and drinking, as well as in other ways. Rum is the great drink of the poor, because of its cheapness—only two centavos a glass. Yet drunkenness is very rare. Wine and beer are the drinks of the upper class, being more or less expensive. Everyone drinks something in the way of wine or liquor—men, women and children, even babies at times. This habit of beginning young is the secret of temperance. People accustomed to drink liquor from childhood learn moderation, and what they see everyday and can have whenever they wish, ceases at the beginning to be a matter of curiosity or extraordinary desire, any more than any article of daily food.

As this same effect of custom among people may be observed in Mexico, Italy and Egypt, and probably Spain, too, it teaches a lesson in temperance that no lecturer can impart. There is this to be said, however. Rum, if pure, is a strong alcoholic drink, and stronger if impure; and it generally is. Therefore, it may be that it injures the stomach and intestines. Then, again, it is the poorer classes who are most injured, as they use the rum. If they could afford wine, most all doubts as to injurious effects would be removed.

Americans come here and, instead of adopting the native custom, proceed to drink in an hour or two more rum than a native would probably drink in three or four days, especially as they find rum so cheap. The result need not be mentioned. The natives do not understand, and do not like to have deal-

ings with people who drink in that way, or that become boisterous.

The café is quite an institution in Puerto Rico. It is a combination of a saloon, restaurant, and sometimes grocery, open in every way; nothing is hidden. It is a place for social intercourse, where a few friends gather around a table and talk and chat in the evening, usually from 8 P. M. to 10 P. M., and sip their wine, beer or rum, or eat a lunch. Nothing is ever disorderly, nor is there any boisterous or improper conduct. There are many natives who do not smoke, but I have not met any that do not drink to some extent; there may be some.

Social life is so very different from that in our country, that it is hard to give a clear idea of it. Poor people are rarely regulated in their daily life by any set rules of conduct, less so here, probably, than most anywhere, because of the fact that many of them have no fixed abode, and live in such small houses that they never stay in them, except to sleep; many do their cooking outdoors in the open air, so they are mostly found on the streets, or somewhere out-of-doors. As to the well-to-do, they live quite comfortably. The houses are furnished in a manner similar to some of our seaside cottages—that is, the floors are bare, or have a small rug or two in the centre of a room. There are rarely curtains, or shades of any kind, and nothing other than some kind of cane bottom chairs, and wood or marble-topped tables, bureaus, etc. This simple furnishing is well adapted to the warm climate.

In Puerto Rico a woman's sphere is exclusively the "home," or it perhaps extends to charitable work in the hospitals, or among the poor. When a woman marries she virtually closes the door on everything except her home and family. She goes nowhere except with her husband, or to visit friends or shopping. This is not saying much, because a young lady follows the same rule, except to go to dances, and then only with her parents, or some well-known married friend. Men and children are the only people who seem to enjoy themselves. The former can do anything, or go anywhere without comment. Without balconies a young lady in Puerto Rico would be lost. They can stand, or sit, on a balcony and look at people. They do much sewing and embroidery, and a great deal of piano

playing, and these things with eating, drinking and sleeping, a Sunday evening promenade on the plaza, and an occasional dance, for which they are always ready, constitute the social life.

Neither men nor women spend much time in reading. In fact, literature, or any form of intellectuality, has but a small place in Puerto Rico. There is a desire for change, but no one cares to be first to break away from the old and established customs; so everything continues in the old way. In this the men are to blame, because a low standard of morality exists among them, and owing to the way in which all are educated, more freedom for women is not considered safe. One is forced to believe that until the system of education is changed, and a higher standard of morality adopted, the present social customs had best be retained; even though they do not always afford the protection for women that is expected. These remarks apply more particularly to the well-to-do, because, as stated above, the lower classes are not bound by any rules, and consequently they all enjoy more freedom. The average woman here is, I think, as good as elsewhere, and the fault is not with her, but her environment and education. The women are far above the men, and as opportunities occur their influence will be felt. They have a great desire, more especially the younger ones, to have everything Americanized or changed.

The people in general are emotional and excitable, but withal docile, and will develop as new opportunities occur, along every line. The masses, it must be admitted, are lazy and not given to overwork. With the low wages received for day labor, about 30 to 40 centavos (18 to 24c Am.), there is not much incentive. The cost of living is not much for those that subsist on rice, codfish, bananas and beans (the chief food of the masses), but it is considerable when the wages received are not enough always to pay for it. The hurricane of August last destroyed all the bananas, one of the principal food elements, and some of the people have suffered in consequence. The bananas are still very scarce. Great quantities of food supplies and some clothing have been distributed among the needy. I believe myself that people are helped better by being

given employment, than by the free distribution of food, except to the helpless. However, the island treasury has until recently had no money to spend for public works, and the municipal treasuries are empty. Now a number of men are employed all over the island, building roads and doing other work.

The people are very sharp and shrewd in business and in politics. The latter is the bane of all the Latin-American countries, and the chief cause of many revolutions and disturbances. It is always a fight between the "ins" and the "outs." When the former get in, they find they cannot give everyone of their adherents an office, and the latter being disappointed join the "outs"; then the latter have a majority, and they get in, either peaceably, or by force. That is the spirit here. Give the people self-government now and in a short time everyone will know it. Under the Spanish régime an office meant a great deal beside the salary, because official dishonesty was recognized, and as long as an official did not appropriate too large an amount of the public funds nothing was said. Then, under various laws, an *alcalde*, justice of the peace, etc., could do a little squeezing by charging extra fees, for work already paid for.

It will take time to eradicate such evils, after so long an education in the methods that established them. Therefore any one can judge for himself about self-government. The people of this island are now their own worst enemies, and must be protected from each other for some time to come. Great patience and justice are required in dealing with them; snap action and judgment won't do. I have taken a great interest in the affairs of the people and the island and have always gotten along pleasantly because I have never forgotten that whatever I may have thought of them, their customs, language, religion and education are different from my own and cannot be changed in a day. It has been unfortunate for the island that so many Americans of the "adventurer" class came over here. Because they are not solid men, and the morals of many may well be questioned. Neither did they bring any capital; yet they expected to live here and get along without work. Besides, they wished, and do still, to overturn everything so as to

make the island suitable for them, instead of adapting themselves to its conditions. Such men do an infinite amount of damage, disgust the natives, and make them think less of the United States. Many of these men have fortunately returned to the United States, but others remain. There are a few of another class who come. They will make a better impression. They have gone into business of different kinds and some of them have capital.

Personally and in their way of living the masses are dirty. They have not apparently been taught to keep clean. The better classes are cleanly and live quite well. The masses dress ordinarily in some form of cotton or linen goods, of light color. These frequently are worn so continuously as to become some unknown color. Most all who can afford it dress up in the evenings, as they do in the cities and towns at home. This habit is common to all classes according to their means. The dress for women who are not in mourning is usually white with colored ribbon trimmings. At balls, parties, etc., there is a variety of color and shades of dresses, usually pink, blue or white. Some of the goods used are very fine and the style is often as good as will be found elsewhere. The dress and goods depend, as elsewhere, on the means of the owner. It was not the custom formerly for women or girls to wear bonnets, hats, etc. (except at church, where it is required), either on the streets or elsewhere; but since the American occupation the habit is becoming quite common, in the seacoast towns at least. I must say that I like the old habit of women not wearing anything on the head. The scene on the town-plaza was always picturesque on Sunday evenings during a band concert, when the *Señoritas* promenaded up and down the walk bareheaded. They promenaded still, but many of them wear hats or bonnets, and the effect is not so good.

The habit of promenading on the plaza, which is not confined to one class at all, but participated in by all, is a very pleasant custom of long standing. There are chairs or benches along the sides where those who do not wish to walk may sit down and watch the others. This custom is common to all the towns of the interior, as well as along the coast. Thursdays and Sundays are evenings for promenading, especially the lat-

ter. They are also the days for the principal entertainments, dances, etc.

The custom of going into mourning is a singular one. If any relative or connection dies, no matter how distant, all, but especially the women, go into mourning, from the baby up; that is, they wear black clothing of some sort, regulated according to the degree of relationship. It makes no difference whether the deceased was ever acquainted with any of the family or not. The period of mourning depends on the degree of relationship. During the period of mourning those whom it affects go nowhere unless to take a walk or visit a near neighbor. I have thought sometimes, when the period of mourning comes, that some of the family affected do not enter into it with the solemnity due to the occasion (from the native standpoint) caused by the decease of an unknown distant relative. A funeral here would put a damper on the ardor of some of those at home, who have always seemed to find pleasure in attending a funeral, whether personally interested in the deceased or not. In this city a funeral is a very simple affair. If the family of the deceased is well-to-do, a hearse is employed, sometimes drawn by horses. Sometimes the coffin is carried on the shoulders of men. For the poor no hearse is used. A black coffin carried on the heads or shoulders of two men is all. For some there are services at the church; for others at the house. The hearse is followed to the cemetery by a few persons either in carriages or on foot. The coffin is followed by from one or two to twenty or more persons on foot. Women do not go to funerals. It was customary before the American occupation for all except the wealthy to be buried without a coffin; that is, the body was taken to the grave in a coffin and then taken out and wrapped up and put in the grave. There has been an attempt to require the use of a coffin or box to enclose the body in the grave, but it is only in a few places where the old custom has been changed. After the body has been taken out at the grave the coffin is taken and used for the next burial. It is largely so now with the poor, who only rent the coffin to take the body to the cemetery. It was formerly required that a family be wealthy to prevent the bones of their relatives from being taken up at the end of a given period and thrown into a com-

mon pile in the fence corner. General Henry issued an order prohibiting this, and requiring municipalities, where the cemeteries were entirely filled, to buy new ground.

One learns to think of the Spanish people and their descendants as being fond of the guitar, mandolin, etc. ; but here he is undeceived, for rarely does he hear a guitar or a mandolin, especially among the upper classes. The piano has replaced them both. Occasionally a guitar or a tiple (a small native guitar) is heard on the street at night and sometimes during the day. The people are all fond of music, however, and there is a good band as well as an orchestra in nearly every town. When either plays there will always be a crowd to listen. There are some very fine piano performers, both men and women.

The market is a place of interest in each town. In Ponce, Mayaguez and San Juan there are large buildings for market purposes ; in other places the open plaza, or a vacant lot, is used for the purpose. At these places vegetables are cut into very small pieces so that a man with a centavo in his pocket can buy a meal. Vegetables, etc., may be bought for prices ranging from one half centavo upwards.

Cock-fighting is the main amusement. The birds are regularly trained and then paraded for inspection. Many of them sell for high prices, and one can take his choice. The merry-go-round is another amusement that seems attractive. The large towns all have theatres. In Ponce, Mayaguez and San Juan the theatre buildings will compare favorably with those of some of the larger towns in the United States. Some of the troupes that visit the large places are composed of very good actors and singers. In some cases they are an improvement on what I have seen and heard in some of our large cities. The troupes are usually made of Spanish-speaking people or native Spaniards. The dance is about the only other form of amusement. It is usually made up of repetitions of the *danza*, a Spanish dance, slow and similar to our waltz. Other dances have been introduced since the arrival of the Americans. At these dances or balls (*bailes*) the refreshments consist of candies (*dulces*) and muscatel (sweet) wine ; now and then ice cream and small cakes ; once in a while coffee or chocolate.

As to statistics : From the records of the Custom House I

find as follows : That all the sugar produced, except an insignificant amount, goes to the United States. The best coffee goes to Europe, and the poorest grades to Cuba. The best tobacco has in the past gone to Cuba, and the poorest to Spain. At present it does not go anywhere. The best molasses goes to the United States, and the poorest to Nova Scotia. So much for exports.

Of the imports :

Lumber comes from the United States and Nova Scotia ; flour and pork from the United States ; most of the codfish from Nova Scotia, and some from the United States ; rice from Germany, England and Spain ; dry goods from England and Spain ; leather and boots from Spain ; shoes from France, but many are made here ; sugar machinery comes from England and the United States ; iron and manufactures therefrom come from England—some from Spain and the United States ; wines come from France and Spain, and some from the United States ; onions and garlic from Spain and the Canary Islands ; beer from the United States and Germany ; butter from Denmark ; Irish potatoes from Spain and France ; some from the United States.

As to climatical conditions : Although this is a tropical country, I consider the climate good, in fact, fine, and there is no reason why any one in ordinary health should not keep just as well as in the United States if he is careful to keep within the bounds of reason, and above all, is temperate and regular in his habits. There are some seasons said to be rainy. It is hard to determine just which they are, for there is a great difference in different parts of the island. There is more rain on the north side of the mountains, particularly in the north-eastern section of the island than elsewhere, and more everywhere than in the Ponce district, which is comparatively dry. The rainy season, however, from my observation, may be said to be May, June, August, September and October. I found much more rain at all times in Aguadilla, on the west coast, than I have observed here. When the season begins it rains very frequently, but not every day, and the rain is very heavy. It may be expected usually in the afternoon, beginning generally between 12 and 1 o'clock, and continuing till 4 P.M. or 5 P.M. It rarely rains in the morning, and scarcely ever at night. The mid-day

temperature averages about 85° Fahrenheit in summer, and about the same in winter, perhaps a little lower. The nights in winter are much cooler than in summer. The average temperature for the year is about 77°. Some days in December and January are unpleasantly warm, the thermometer reading 90 or 92° Fahrenheit. The southeast (trade) wind prevails during the day; at night it shifts to the northeast, and is often uncomfortably cool at all seasons without regard to the temperature, which at first one is apt to believe to be low, but discovers that the mercury stands as high as 84° or 85°. The mercury is lowest just at daylight as a rule. The nights are always comfortably cool at all seasons, especially in the mountain regions. The winter months, especially January and February, are dry; so is March. Sometimes there is a little rain during those months, but not much. This makes the day comparatively warm. The most uncomfortable period I have ever experienced was in December last. The summer heat generally, however, is more penetrating because of atmospheric conditions.

One thing is to be said of the people, they are kind, courteous and hospitable, in their way; and many are well educated ladies and gentlemen, pleasant to meet. Of course, their customs are not our customs, and one must think of that before passing judgment. Nor is their language our language, and that fact makes a great difference. With fair, honest and just treatment the people of this island will make good citizens. It will require time to make changes. New customs will gradually introduce themselves, and in the meantime the people must be educated morally and otherwise, so that they may fully understand modern methods of good citizenship. With the exception of the Custom House statistics given above, the foregoing is the result of my own observation, and I do not know how far others will agree with me, but I do not think they will differ much from what I have said.

From the agitation that has been going on in the United States and in Puerto Rico concerning the tariff, one would suppose there was a terrible condition of affairs here. Whereas, the conditions are no worse than when the American occupation began, except so far as they were affected by the hurricane of

last August. The principal articles of food of the masses—flour, rice, codfish and pork—all enter the island *free of duty*, as well as rough lumber. These articles have been on the free list for some time past, and the expectation was that the poor would be able to get them cheaper. There has been much disappointment because this expectation has not been realized. The cost of all the articles named is just the same as, if not higher than, it was before the duty was taken off. The wholesale dealers get them cheaper and make a good profit, but the consumer pays no less for them. The proposed 15 per cent. (of the Dingley) tariff will not, probably, make him pay more. The only products to enter the United States worth considering are sugar, coffee, and tobacco. The claim is made that the former markets for Puerto Rico products have been closed. This is true of tobacco; and so far as I can see, of tobacco only. Formerly the best tobacco of the island was shipped to Cuba, and the poorest to Spain. Since the war, those countries have placed a practically prohibitive tariff on tobacco. The United States tariff has always, during recent years at least, been so. On the other hand, there are only 4227 cuerdas (.94 of an acre) of land on the island planted with tobacco, as against 122,358 cuerdas of coffee, 61,556 cuerdas of sugar and 93,508 cuerdas of grain, to say nothing of other products. Of the tobacco raised, the best authorities say that only about one-third on the island would ever be shipped to the United States, so that it is the last of the three principal products to be considered. However, tobacco is here the poor man's crop, because any man with only one-half an acre of ground can raise some, and have no trouble in selling it. The principal, and practically only market the sugar planter has had for several years has been the United States, and the tariff does not seem to have prevented him from selling his sugar there, nor does it now. Of course, if the tariff is reduced, or free trade between the United States and the island be granted, the producer's profits will be greatly increased, and that is the main cause of the agitation here. The coffee planter has no ground for complaint, because coffee already is free of duty in the United States. The damage to the coffee plantations was great during the hurricane previously referred to, but I do not see how tariff legislation can undo the

ravages of a storm. The desire for greater profits is the chief cause of the agitation.

I have shown above that the free entry of food products and lumber has not, up to the present time, diminished the cost to the consumer. The remedy is to be found not in tariff legislation alone, but in a change of the laws to such an extent as will prevent a continuance of the monopolies and combinations which were part of the privileges of the few. Let any one try to buy or hire an article, or articles, for business purposes, and he soon discovers that he is at the mercy of some combination, and can do nothing unless he is willing to pay the exorbitant prices fixed by it. A combination of this sort, by allowing credit to its customers, soon makes them its debtors, and keeps them so; and thus destroys independence of action on their part.

The resultant evils fall mostly on the poor and ignorant, and nearly four-fifths of the population are both. Practically all the bread on the island is made at the bakeries; the cake as well, and so far as I have been able to discover, little or no use of flour is made by families. One rarely sees hot bread of any kind, partly because the natives do not know how to make it, and partly because they have no means of baking, as they do not use stoves. Some families have a large brick oven for roasting meats, etc. Those that do not have them use those of their neighbors. When the Americans arrived here the masses were in an anæmic condition all over the island. This was due to a lack of proper food—that which had some life-giving properties. A continuous diet of rice, codfish and bananas, with now and then some bread, is not apt to put much blood into any one's veins. Meat was an unheard of luxury, because the high price placed it, as well as many other articles, out of the reach of the poor. I do not think the general conditions have changed much in this respect. One of the things expected from the American occupation was a relief from such conditions. Matters cannot be remedied much either by civil government or free trade so long as the changes in laws and methods previously referred to are not made; neither will prices be any lower until they are. Nor will the masses be able to better their condition. Of course, the damages done by storms or by hurricanes such as we had here last summer cannot be foreseen, or pre-

vented by legislation, and the country people, from their location in the mountains and valleys, are the chief sufferers in such cases. They should as far as possible receive assistance.

From a military point of view the island is not easily defensible, except with the assistance of a good navy. There are a few points along the coast which can be defended by a small army; but owing to the character of the coast an invading force would not, except for convenience sake, land at such points. To defend others would require an army of considerable size, and a considerable part of a navy. The interior of the island is mountainous, with but few passes, which afford many points of strong defense for a comparatively small army. Had the Spanish army made any real effort to defend the island, which it did not, these facts would have become apparent.

The strategic importance of the island, from its position, is not, of course, quite as Cuba's would be, but still is considerable. Its commercial importance is great, and with proper trade regulations will prove a great acquisition to our territory. Trade with the United States has already increased enormously, and there is not yet one-third of what there will be. In business the people are exceedingly smart and shrewd—no Yankee is more so. One wishing to do business with them must be wide awake. *Capital is necessary* to enter into any business on this island. Those who come here with any other idea will be grievously disappointed. As in business, so it is in politics. The latter is a personal and social matter, dividing families and creating feuds and quarrels. The two political parties on the island have real cause for existence now, as with the passing of the Spanish régime every reason for prolonged existence of old differences was removed. Later on new parties will be formed on different lines, as in the United States. At present the bone of contention between the parties is the offices. The feeling is bitter and, as is said above, personal and social. The offices are desired for the benefit, not of the people, but of the relatives and friends of those in power. With this idea in view, as many offices are created as possible. The party in power exacts all the taxes due from its opponents, but is not very particular whether its friends pay or not. This creates distrust, for a public office here becomes a *private* trust.

IN RE NATIONAL GUARD ESSAYS.

BY BRIG. GEN. THOS. M. ANDERSON, U. S. A.

AS fourteen Volunteer organizations reported to me for duty during the war with Spain, and as all, with two exceptions, had formed part of the National Guards of their respective States, a brief statement as to their character and service may be of interest in connection with the National Guard Essays published in your last number.

The volunteer regiments, battalions and batteries which served with me in the Philippines were the 1st California, the 2d Oregon, the 1st Nebraska, the North and South Dakotas, the 1st Montana, the 13th Minnesota, the 1st Idaho, the 10th Pennsylvania, the Wyoming Battalion, the California Heavy Artillery, one battalion of the Tennessee Regiment, two Utah batteries, and the Astor Battery. Practically all of these organizations came to the front with whatever advantages they derived from their original associations and with all the defects inherent in the National Guard system.

They all brought a lot of needless impedimenta in the way of heavy tentage, cumbersome mess chests, and over allowance of officers' baggage; while on the other hand they were short on shoes and under-clothing and company books and blanks.

As the regimental quartermasters did not, as a rule, know how to make out their estimates, they were at the mercy of the quartermasters' employees in San Francisco, who persuaded them not to put in full estimates, as full supplies were being shipped to Cavité, so that they could more conveniently draw what they needed upon their arrival there. These statements were false and entailed great inconvenience on the regiments whose commanders allowed themselves to be imposed on. When we arrived at Honolulu it was found that the men of one regiment had only the under-clothing on their backs. I had to have enough under-clothing bought there to give each man two suits.

On the trip over I observed that the Volunteer officers

were studying strategy and grand tactics, while they knew but little of military paper work. I therefore detailed my staff officers as instructors in making out estimates, returns, and the like. It was found that the first sergeants filled in the first form of their morning reports correctly, but failed to fill in the form on the reverse page, giving the details and changes, so regimental adjutants in making out their consolidated morning reports neglected to give the alterations. In making out the monthly returns and the tri-monthlies it never seemed to occur to the colonels to see that the figures proved. In my experience the company commanders were relatively better than the field officers. The Governors of States seem to have selected the latter from political considerations or to conciliate local interests. There must have been many veterans of the Civil War who would have made much better field officers than those appointed. There were some very competent men among them, but even some of the best of them were hampered with what their governors might think. One very fine regiment had a very worthless set of staff officers. The colonel knew it, but had not the nerve to reduce them for fear the governor might not like it.

Another trouble with the State Guard system is that it does not send a fair proportion of its best men to the front. Thirty per cent. is a large proportion of a State Guard company to volunteer; yet even the new men show great aptitude in learning the tricks of the trade. To illustrate: The Regulars know that the Buzzycott ovens soon burn out and therefore do not depend on them, but improvise ovens for themselves. As soon as the Volunteers saw this they went to work and built themselves better ovens than the Regulars.

Volunteer troops never appreciate the value of time. It is hard to impress on them the absolute necessity of promptness. I had to put quite a number of officers in arrest for tardiness, but it had a good effect. I may point out two other weak points. The organizations which reported to me were insufficiently drilled in extended order drill and long-range target practice. Our new men got badly rattled under the night firing, but they did not break or fire into each other. It was my wish that they should be subjected to some preliminary fire

experience before being put in for decisive work, and our two or three night combats near Manila proved an excellent preparation.

At the beginning of an active campaign a National Guard regiment has several manifest advantages over a new Volunteer organization. They are at first better drilled and provided and the officers and men know each other. But it soon becomes apparent that the militia regiment is under a stronger home pull. The men are more often home-sick and anxious to get back. The promotions and appointments are more frequently influenced by local considerations. I know a number of instances where great injustice was done, but this seems inevitable under any system.

As a result of my experience I have come to regard our State Guards as a School of Arms rather than as a possible reserve. The State Guards of our sea-coast States might, it seems to me, form an effective heavy artillery reserve.

Translations and Reprints.

"THE STUDY OF BULLET WOUNDS WITH PARTICULAR REFERENCE TO THE NEW FIRE-ARMS."

BY STAFF SURGEON DR. FESTENBERG, BRANDENBURG.

(Translated from *Die Deutsche Militärärztliche Zeitschrift* for Feb and May, 1899.)

BY N. S. JARVIS, M. D., LATE CAPT. AND ASST. SURGEON, U. S. A.

IN peace times shot wounds are necessarily infrequent both in civil and military communities.

Since in modern wars, shot injuries constitute the majority of wounds, we might say that "war injuries" mean gunshot wounds. Each surgeon who undertakes to treat gunshot wounds must have a clear understanding of the nature and extent of the surgical methods in vogue. As V. Bergmann claims that on the battle-field most wounds must be dressed according to a definite and uniform plan, so with the same right, it can be contended that the system of examination and subsequent conclusions shall move along on certain uniform lines.

Upon the proper carrying out of these details depends the well being and fate of many thousands.

This study will be carried out upon the following plan: we will explain the customary methods in vogue with regard to gun-shot wounds, examine them as to their justification and practical worth and then describe the symptoms present in the various wounds in the different parts of the body and which are important for diagnostic purposes.

It is incumbent upon the surgeon in war times to be doubly cautious, for those rules which obtain in civil hospitals, in peace times, must be followed just as rigidly under the unfavorable conditions of war.

The proper examination of bullet wounds begins with a close inspection (not with the hands, but the eyes) as in surgical procedures one can often by a single glance, determine the diagnosis if accustomed to use his eyes sharply and thinkingly.

The views of surgeons as to the effect of bullets, from the arms with which most modern armies are now supplied, have been about as varied as the uniforms which these armies wear. Lately, however, very valuable conclusions have been arrived at from experiments upon cadavers, at the instigation of the Prussian War Department.

Up to a distance of 600 metres, in only two instances, were the fibres of the sack cloth, with which the cadavers were covered, found in the wound; from 700 m. on, however, after the cadavers had been enveloped in black sack cloth, fragments were discovered in 12% of the wounds. In two cases, however, lately reported in civil life, in which the wounds were developed at a range of 500 m., pieces of clothing were found in the wounds. It is evident that the extent and shape of perforating wounds depends upon the striking angle, impulse and consistence and tension of the wounded parts. Upon the presence or absence of bony comminution, favorable conclusions can be deduced from the size and shape of the orifice of exit, although Demosthene of the Greek army and others will not accept this as a conclusion. As we will see later on, however, where great spaces of skin are detached injury to a hollow bone can be suspected, although the presence of a small opening does not necessarily preclude injury to the bone.

As a result of the revolution in the construction of fire-arms, which has taken place in the last decade, we now have a weapon whose ballistic power is fourfold greater than that of the old needle-gun. The high velocity of the present bullet leads us to believe that in future wars so many unusual shot canals will not be so common as was the case in former days. The medical reports of the Franco-Prussian War picture a large number of remarkable observations: not infrequently instances of perforating wounds were recorded with but one wound—that of exit; in one instance two mitrailleuse shots entered at the same point, both being found in the deeper tissues; a most unique case reported was one in which a split ball had emerged at two distinct orifices 3 cm. from each other, the bullet itself having entered by the mouth; three or more orifices of exit were explained by the fact that the original ball had been divided by contact with bone and that the original shot and its

fragments had emerged by separate points, or that the wounds resulted from two distinct bullets entering by distinct orifices and passing out by a common point of exit.

With the present weapon, however, we have to deal with simpler conditions ; if the surgeon finds but one wound he will not go far astray in the conclusion that the ball is in the tissues ; two distinct wounds will usually correspond to points of entrance and exit ; where there are several orifices of exit the probabilities are that the bullet has been deprived of its mantle, which is not apt to happen unless it has come in contact with the compact zone of the long bones. With what frequency blind shot channels with retention of the jacket may occur has been shown to a certain extent by experiments instituted by the Prussian War Office ; in 654 instances retention of undeformed bullets was found three times (at a distance of 1600 m. and over) by indirect shots once (at a distance of 1000 m.). At distances of 1600 m. and further such obstacles can present themselves which will divert the direct course of the unchanged bullet. While at first it was supposed that bones only would change the direction of the bullet, yet at distances of 3000-4000 m. soft tissues can arrest the course ; and at these greater distances the retention of deformed bullets was observed 15 times by direct shots and several times with indirect.

If splitting of the projectile takes place, which most often happens where it strikes a hard body, such as the *linea aspera* of the femur or crest of the tibia and usually at ranges up to 1200 m, fragments consisting mostly of portions of the mantle will remain ; this occurs in one-fourth of the cases and the ragged pieces of the mantle may penetrate deeply into the tissues. If the projectile in its course strikes an intervening obstacle it loses its penetrating power and effectiveness, but its fragments themselves may cause dangerous injuries. The great penetrating power of the mantled bullet leaves the edges of the wound less bruised than formerly ; and where the bullet enters bones the orifices of entrance and exit are not so apt to lie on the same side of the injured limb, but at opposite points. In careful experiments, the results of which seem convincing, never did the point of exit deviate at a greater angle than $100-120^{\circ}$ after the bullet had struck a hard zone of bone and been deformed.

The forward movement of the bullet acts like a sharp knife upon the part which is struck; it does not thrust aside the arteries without laceration. Even bullets which graze will suffice to open the blood vessels and the openings into the arteries will be smooth and gaping, thus retarding thrombus formation.

There is not much probability that small objects which the wounded man carries on his person, such as coins, buttons, medals, etc., will be torn off and act as immediate projectiles; the great velocity of the small calibre bullet justifies the view that such obstructions will be penetrated.

If possible, the surgeon should learn from the patient or litter bearer the amount of primary hæmorrhage and other circumstances associated with the wound. Of some value in determining the action of the bullet is an approximate knowledge of the range, for with it varies the potential power of the projectile and with it the hydraulic or hydrostatic pressure go hand in hand. However, it is never safe to draw too definite conclusions as to the nature of a shot injury from a mere knowledge of the range. The opinion of the wounded as to the presence of the bullet in the tissues is of doubtful value; even a well defined sensation pointing to its location cannot be relied upon. If the bullet is in the hands of the wounded man, it must be inspected with reference to its change in shape, its entirety or as to the possibility of its having left portions in the tissues. No definite conclusions can be drawn as to the range by the character of deformation of the missile. The surgeon must inspect the limb above and below the point of injury, the difference in the length of the extremities, and he will acquaint himself with the amount and shape of the tissues destroyed or detached from the limb; he will consider from the anatomical position of the wound what tissues may have been involved, whether blood or other fluid (such as gall, fæces, urine, synovia) has passed out of the wound and any other information bearing light on the question.

Changes in the skin from the effects of powder burns are of more interest from a medico-legal standpoint than to the military surgeon.

To determine from mere inspection the character of the

wound the surgeon must be thoroughly familiar with the weapon, its missile and the kind of powder; only he who knows the inherent destructive power of fire-arms can intelligently undertake the necessary surgical methods.

Without entering too closely into theoretical details, I will content myself with a mention of the most vital points. The physical action of the bullet is dependent on the one hand upon the force with which it strikes an object, its power of resistance. The former force, its potential energy, is determined by its mass and velocity; its ballistic formula is $\frac{Mr^2}{2}$. The velocity itself depends upon a variety of circumstances, such as the kind of weapon, the mass and explosive power of the powder, the shape of the bullet and rate of rotation.

From the wounds themselves the surgeon directs attention to neighboring parts; inspection alone often suffices, where there is considerable displacement of fragments; in these cases it remains to further decide whether shot wounds of the long bones in the vicinity of joints have involved those joints and whether this is evidenced by suffusion with blood.

The next step in the examination is palpation of the wounded parts; by this the surgeon concludes whether there is emphysema of the skin on outrush of air from the opening, the characteristic pain of fracture, crepitation and abnormal mobility, whether there is swelling near a joint and whether this pulsates or not. Further, he notes the character of the pulse below the point of injury, whether it is absent or grows progressively weaker than the corresponding pulse on the opposite side; moreover, the temperature, voluntary and passive mobility of the wounded limb should be considered. By gently moving the hand along the limb the sensation of an embedded foreign body can be often experienced. If the surgeon cannot convince himself by other means whether or not the bullet remains in the tissues and can be reached from without, he can finally resort to the use of a probe or the exploring fingers. Great is the number of ingenious instruments which have been devised and which serve not only to the probing of wounds, but also to discriminate between bullets and bone. Most of them are of mere historical interest. A greater value is now attached

to the probe in the presence of a steel mantled bullet. This steel surface is converted into a magnet by the magnetic probe and its location is determined by the movements of the needle on the surface of the skin. Until recently the use of the probe or searching fingers was considered indispensable in military surgery, but this was carried to great extremes.

A permanent revolution in the ideas of wound examination has been brought about by our increasing knowledge of the causes of infection.

Lister's views, both from theoretical and practical stand-points, now receive general recognition. We are not only informed as to the nature of the injurious bodies which enter wounds, but we have learned how they enter and that they are introduced by contact with liquid and solid bodies.

There are two methods of infection of bullet wounds: the missile itself and the foreign materials introduced with it, or the hands, instruments, or dressings upon which germs collect. So far as the first danger goes, the very complete experiments of Messner, Hobart, and Lagarde show that the bullets are not sterilized by the heat produced in their passage through the gun, but as a rule they are previously sterile. But if previously infected they invariably infect the shot channel. Hobart vouches for the fact that sterilized gelatine tubes inoculated with fragments of uniform which had been carried into wounds showed deposits of spores and schizomycetes. Experiments instituted by Kocher met with similar results. Although such foreign bodies do not often become encapsulated within the tissues without suppuration, yet this rule has its exceptions. The torn condition of the wound and the fragments of uniform or clothing naturally encourage suppuration, while the effused blood serves as a favorable culture material. Von Bergmann has reported instances of healing without suppuration, where fragments of clothing were carried into the knee joint, and Von Langenbeck, Frankel, Klebs and Langenbach have reported similar experiences. Pfühl even came to the conclusion that infection from fragments of clothing was not to be so greatly dreaded; small sections of soldiers' stockings, which had been a long while in use, were placed under the skin or in the various cavities of animals and in 51 experiments of this kind not

a single instance of suppuration resulted. Karlinski's experiments, however, produced exactly opposite results.

Pfühl's remarkably favorable results are explained by the fact that all germs are not of necessity infectious for man, and moreover a large part of the germs is washed out by the blood current. Moreover, foreign bodies infected with streptococci can remain in the tissues without reaction, as has been proven by Fraenkel, who succeeded in bringing about encapsulation of infected fragments of clothing, without pus formation.

But as a result of all observations, a rule develops itself which must be our guide in the examination and treatment of gun-shot wounds. Germs which enter the wound with the bullets we can ignore with good results; but not with the same equanimity can we view those wounds into which fragments of clothing have been imported, but even here we must not necessarily anticipate suppuration, for in the majority of cases we will not go far astray if we consider them germ free.

While the danger from primary infection is to be slightly anticipated, yet, on the other hand, we must be all the more guarded lest the wounds become so by the hands of the surgeon or helpers. The fate of the wounded man rests largely upon what happens before and at the time of the application of the primary dressing. Von Bergmann insists that the hands of the surgeons and assistants at the first dressing station must be kept constantly aseptic.

But will it not be next to impossible to do this where there is a great crowding of wounded men? We must leave gun-shot wounds, particularly fresh wounds, untouched as much as possible, for all importance attaches to the careful inspection and examination. If we display the utmost hesitation in the handling of wounds this cannot be considered a policy of "*laissez aller*," but rather the practice of a sound principle of "*nihil nocere*." For the conditions of war, the following methods should be in detail taken to heart: On the battle-field, at the principal dressing station, and in fact, at all points where complete asepsis of the fingers and instruments cannot be maintained, probing must be altogether avoided; for the strict adherence to this rule, it must be also expected that ex-

traction of the bullet must be denied, even where it is felt distinctly under the skin.

The manipulation of wounds should be undertaken only to arrest dangerous bleeding, or where by pressure on the larynx or bronchi, life is imperilled through the danger of suffocation; operative measures even at the dressing station must not go much further.

The following conditions are generally accepted as justification for handling of wounds:

(a) Extensive hæmorrhage, and in these cases arrest of bleeding can be often brought about by the insertion of an iodoform tampon, provided the bullet opening will permit its introduction; but the safest plan will be the complete excision of the injured section of blood vessels, whose vitality has been impaired.

(b) Wounds of the respiratory tract in the neck; to these belong not merely those of the pharynx, thyro-hyoid spaces and those in this neighborhood, but also wounds involving the lower jaw. All these wounds demand careful tracheotomy, as œdema of the glottis with rapidly ensuing suffocation is apt to develop.

(c) Wounds of the bladder: these demand a free escape for the urine and the introduction of the catheter; a ball left in the bladder will sooner or later develop functional disturbances and must be extracted as soon as possible, either by the usual operations for stone, or by following the track of the bullet. In the after treatment, the surgeon will have to rely on the catheter or complete drainage of the bladder.

(d) Other instances, though rare, which would demand immediate extraction to relieve reflex disturbances, through pressure, would be justified by reflex epilepsy, unbearable neuralgic pains, etc.

(e) Extensive laceration of portions of limbs which would exclude any hope of saving them; such wounds result not only from grenades but also occasionally from bullets and demand removal, for conservative procedures here, even under antiseptic precautions increase the danger to life from sepsis.

(f) Masses of dirt must be removed and not by the fingers, but with forceps.

(g) Not such an unanimity of opinion prevails as to the necessity of immediate interference where bullets are retained in the cranial or abdominal cavities. A discussion of these much disputed questions will be taken up later. If in the search for bullets, they cannot be found without great effort, it is best for the progress of the wound to permit a slight rest, nor is it ever permissible to tease the tissues in fishing for retained bullets.

As we have hitherto spoken of fresh wounds, it now remains to mention that in the later stages of the wound history, where suppuration exists, accurate probing may be unavoidable. The retention of particles of clothing may be determined, where the discharge has a yellow hue or where particles come away in the discharge. Where in exceptional cases, persistent searching becomes necessary, the surgeon must admit that he will meet with better success with the fingers than with an instrumental probe, for the sense of touch helps us to discriminate quickly the difference between bone and metal. On the other hand, metallic instruments are much more easily sterilized than the fingers, particularly at the dressing station; and then the narrow channel produced by the small calibre bullet does not allow the searching finger to enter readily, and the fascia closes on it in its passage. A splitting of the canal as in earlier days, that is a primary "debridement" simply for the purpose of examination must be unconditionally avoided, as this gives to germs both "gate and gateway."

If it cannot be avoided then probing must be performed as gently as possible, for the self-evident reasons of possible infection and the creation of false passages.

Mostly to be recommended are thick button sounds made of soft pewter, which have the double advantage of flexibility and the least tendency to injure the soft parts. When probing with the fingers becomes necessary, they should be most gently inserted and should follow the channel, exploring its lateral walls. In long canals with orifices of exit and entrance, the fingers of the two hands can be introduced. In civil hospitals where safer conditions are supposed to prevail, probing should be restricted to those cases in which other means of examination do not give sufficient information, and where better results would attend a positive diagnosis, but in no case should we probe merely to de-

termine how much tissue is destroyed or whether the ball still remains. Every surgical procedure without a definite therapeutical object is a "work of diagnosis," at the expense of the patient. Entering the bullet channel will produce harm, particularly where there is a suspicion of wounded blood vessels, or where the track enters one of the cavities or a joint. Now we do not see in bullets such carriers of sepsis as formerly, but can calmly await encapsulation or wandering of the projectile; without subsequent infection from without, encapsulation occurs almost always without irritation. The small size and smoothness of the modern bullet are much more adapted to encapsulation (Mickuliz v. Esmarch). Even the fragments of shattered bullets should not demand extensive exploring at the dressing station. The retention of the bullet is so much the less to be considered, for Schimmelbusch has shown that if it is infected, the microbes enter the general circulation in about five minutes, thus rendering disinfection after that time useless. It is certain that in earlier wars more died from the attempts at locating missiles than from the bullets themselves. The conclusion forces itself upon us that the search for bullets in future wars will occupy a subordinate place in the operative methods of the surgeon. As we have seen, other foreign objects (such as particles of clothing, etc.) are more dangerous for wound infection than the bullets themselves. If these present themselves at the wound openings, the surgeon will remove them at the dressing station. The searching for these bodies presupposes the same cleanliness as to the hands and instruments and the utmost delicacy of touch, as rough manipulation might readily force adherent germs into the tissues; for if microbes once enter the lymph spaces, disinfection would be impossible, while on the other hand, elimination of septic organisms might have been otherwise possible. In the examination of septic wounds, Langenbeck's method of protecting the finger with a rubber cap is advisable. There is no doubt that the discovery of the last few years, the "X Rays" of Roentgen, will prove of priceless value in military surgery. The photographs give a clear view of the bullet and the bones, the direction and size of the shot channel, the location of separated bony particles, the extent of the line of fracture, and place us in a position to study

accurately the effects of the small calibre bullets on the living body. This means of diagnosis, however, can be utilized in permanent establishments; the most suitable place is the reserve or base hospital, where an electrical plant can be instituted, and where time, space and other conditions will permit the development of large plates. In advanced positions, the surgeon will have to dispense with this method of investigation which can be of such service as an aid to operative measures.

SPECIAL SECTION.

Having pictured the methods of examination in a general way, it remains to mention the phenomena presenting themselves in gunshot wounds of the various organs of the body, and which are of value in the diagnosis. In this investigation, those signs will have to be considered which stand only in immediate relation to the wounds of the particular part, for it is always possible to draw conclusions, not only from an examination of the wound, but also from the general symptomatic picture.

Skull.—Of shot wounds of the coverings of the skull, those limited to the soft tissues, present very few difficulties themselves, as they are open to sight and touch; for their treatment a simple aseptic compress suffices, and it is unjustifiable to aggravate such a lesion by attempts, through operative measures, to convince ourselves of the presence or absence of splintering. Severe brain symptoms are usually absent, for the ball when it tears the soft tissues of the skull does not produce similar shock, such as we meet with in the ordinary injuries of civil life. A much greater interest attaches to the shot wounds of the skull and brain itself than to the soft coverings, for the mortality of the latter rests largely with subsequent wound infection; while in injuries of the skull and brain itself the mortality is greatly increased, since the introduction of small calibre bullets. While the reports of the Franco-Prussian War give us a long list of injuries of the cranium, involving the external or internal table or both, in the latter case with or without involvement of the external layer of the dura mater, in future wars, lesions of the bony vault will hardly be separated from those of the brain itself. Experimental shooting exemplifies in the

clearest way how profound are the disturbances produced by modern bullets on complete skulls. A brief review of these experiments exemplifies this: Up to 50 metres the small calibre ball shatters not only the cranial vault by irregular lines of fracture, but even the base is splintered. At the orifices of entrance and exit the skin is destroyed.

With increasing distances these disturbances diminish irregularly and slowly. Up to 100 metres, the skull is still greatly shattered, but the two lines of fracture are clearly to be distinguished, that at the point of entrance radiating, that at the exit ring form. The latter, however, is always gaping. At these distances the base is also fractured; the shot openings in the cranial coverings are small, particularly in perpendicular shots, and give no conception of the destruction within.

The point of exit is stellate or dentated, does not exceed 2.3 cm. in diameter, but is usually larger than the orifice of entrance, which does not exceed the diameter of the bullet itself. From the point of exit, rarely from that of entrance, brain tissue oozes.

At great distances the fields of fracture are clearly distinguished from each other and the fissures diminish greatly, so that at ranges of 1600 m. often only lines of fracture at the orifices remain, and finally only bullet holes. The first bullet holes are observed at a distance of 1600 m., but usually at ranges of 2000 m.; at distances of 2700 m. the force of the shot has so decreased that the bullet may often be found protruding from the skull.

The injuries to the *dura mater* correspond in general to the bony injury and vary according to the distance, from a great loss of tissue, to a destruction of tissue merely at the orifices of entrance and exit. At close ranges the brain is quite generally pulpified, its fragments presenting at the point of exit and clots of blood of varying proportions are found in the meninges and at the skull openings.

At greater distances the path of the bullet in the brain is generally cylindrical, with lacerated walls, and at the point of entrance the canal is usually widened by splinters detached from the skull, while at the orifice of exit it is really often narrower than the bullet itself.

In the years of 1870 and 1871, according to the statistics of Fischer, of those who fell on the battle-field, fully 50% (49.2) received fatal wounds of the head, and of the 291 wounded who were rendered aid on account of wounds of the head (exclusive of simple concussion) 227 died, 78%. In future wars these numbers will be increased. Shot wounds of the skull at close range will not require treatment, but even those struck at long ranges (over 2000 m.) will offer few instances which will live to reach the dressing station. Death on the firing line would result from immediate destruction of important ganglia, from pressure following hæmorrhage, and finally an extremely large mortality in wounds of the cranium can be attributed to an action not inaptly termed "contusion by concussion." The symptom complex has not been observed in the living, but it must be distinguished from our conception of concussion, as also from the picture of localized contusion. It starts in immediately with the injury and corresponds with most of the phenomena of general, not local compression. The diagnosis of skull wounds is clear enough when the surgeon finds the orifices of entrance and exit. The results will be more readily arrived at with a knowledge of the ranges. The surgeon should not allow his diagnostic ardor to drive him to useless manipulation in and around the wounds, such as percussion of the skull with sounding instruments (Paré, Stromyer, Lücke), auscultation and palpation.

The problems which will present themselves in penetrating wounds of the skull are based upon the views of treatment. We will therefore be obliged to devote a brief space to their discussion. The wisdom of surgical treatment is apparent when extensive skin wounds are present, and when beside the skull is more or less "plowed up" by bullets striking at a tangent. These cases demand thorough cleansing, the removal of foreign bodies, loose splinters of bone and hair. In wounds which have been possibly but not to a certainty infected, with small openings, such as in revolver shots, corresponding in their effects with small calibre bullets at long range, E. von Bergman considers that the duty of the surgeon consists in non-manipulation and will bring about just as good results. With convincing arguments he points to the conclusions published in his anni-

versary essay ("concerning the healing of pistol shot wounds of the brain").

Based upon the results of his rigid investigations, primary trepanation is indicated only under the following conditions :

(1) When any portion of the cranium traversed by the middle meningeal artery is injured. A very valuable sign of this lesion is the occurrence of a free interval between the time of the injury and the symptoms of compression. In the beginning the injured man is stunned, but soon recovers his senses, losing in a measure, however, his intelligence as the blood accumulates between the dura mater and cranium. This hæmorrhage may continue several hours and is marked by a gradual slowing of the pulse, which has a full volume, and then appear evidences of paralysis on the opposite side of the body. Finally bulbar symptoms appear.

2. When the motor cortical region is injured, and symptoms of cerebral irritation supervene rapidly after the injury, as indicated by cramps and spasmodic contractions on the opposite side of the body. In these cases it is to be suspected that a splinter of bone has injured the cortical region and is producing and maintaining the irritation.

Secondary opening of the skull, according to Von Bergman, is to be considered when in the first few days after the injury an acute abscess is apparent, or after complete healing of the wound, after weeks or months, evidences of brain abscess present themselves.

The fact that the bullet or portions of a bullet are left in the brain should not interrupt a policy of delay, provided, of course, no septic symptoms appear. A sufficiently large number of cases have been recorded (with particular accuracy in A. Kohler's historical investigation of encapsulated and wandering bullets) where encapsulation in the brain is recognized; and as we do not anticipate breaking down of apoplectic foci into abscess, just as little should we concern ourselves lest fragments of brain tissue should pursue any other course, provided antiseptic healing of the wound arrests subsequent infection. On the other hand, it must be admitted that the surgeon cannot await encapsulation with the same indifference as where the bullet has entered other parts of the body. Not only

can a foreign body in the brain develop even years afterwards a sudden acute meningitis, but the encapsulated ball frequently brings out increasing nerve disturbances of the most varied kind. The removal of the missile will have to be determined upon as soon as its retention is indicated by the signs of localized brain injury. This should never be attempted, however, before the patient arrives at the field hospital. The action of mantled bullets on the skull is of such a character that we rarely find splinters of bone in the brain. The point of entrance in the bone is converted into the most minute fragments which are forced several centimetres deep into the brain and of themselves rarely excite serious disturbances. The fragments from the bone at the orifice of entrance are driven deeply into the brain, thus protecting the motor areas from retained particles, while at the orifice of exit the fragments surrounding the opening are forced outwards.

In examining shot wounds of the organ of vision every technical method known must be employed. Those disturbances of vision, whose cause is not readily appreciable through the ophthalmoscope, are extremely difficult to explain. In the majority of cases known as "*Commotio retinæ*," which also happen when the immediate neighborhood of the eye only is injured, clinical and experimental observations show that hæmorrhages have occurred between the choroid and the nervous layers. When the eye becomes œdematous, clouds are visible in the *retinæ*, which after a few days disappear.

The immediate depression of the visual power, which may be one-fourth to one-third of the normal, outlasts the cloudiness, finally also disappearing.

Not to be confounded with these cases are those in which traumatic amblyopia or amaurosis rest entirely upon injuries to the optic nerve, due to comminution of bone in the optic canal. Here we find no objective change in the background; the power of vision is completely lost or reduced to a mere recognition of light and ordinarily confined to one eye. The loss of vision is permanent if the nerve fibres are torn or bruised, but on the other hand, improvement is possible if there has been simple bleeding into the nerve sheath. In injuries back of the orbit, both eyes are apt to undergo changes in vision. Double-

sided blindness without other disturbance is possible in isolated destruction of the optic chiasm, but destruction of any part of the optical path on one side behind the optic commissure will produce homonymous hemianopia. Direct bullet wounds of the organ of hearing are on general principles to be examined as those in other portions of the body. If the ball has penetrated the tympanic cavity or the bones of the ear the surgeon may wait as long as encapsulation seems probable. The moment reaction sets in, however, the ball must be removed as rapidly as possible, for there is no region in which, for anatomical reasons, suppurative processes must be so anxiously watched as those of the ear. And it should be remembered that missiles and even the condensed air have a profound influence on this delicate organ of sense, and deafness may result, not merely from a ruptured ear-drum, but from shock to the delicate nerve terminations of the auditory nerve. Although isolated peripheral injuries of the other cranial nerves from the first to the seventh are not frequent, yet the physiological functions of the individual nerves give us a guide as to what occipital phenomena and what symptoms are to be expected. In connection with shot wounds of the skull and brain, it is proper that next in connection therewith injuries of the spinal column and cord should be considered, as the latter is but a prolongation of the brain and in injuries of the skull frequently sympathizes. The spinal cord is indeed not often struck by bullets; in the Franco-Prussian War shot injuries of the cord comprised only 3.6 per cent. of all the wounded under treatment on the German side. Spinal injuries have been rarely recorded without accompanying injury of the cord itself. Extensive observations as to how the spinal column and its contents are affected by the modern bullet are wanting. Analogy, however, would indicate that as a rule distinct bullet holes will result in injuries to the spongy tissue up to distances of 500 m., but that splintering will result at greater ranges. The spinal cord at close ranges will be extensively disintegrated, that is, destruction decreases as distance increases, but up to 1600 m. hæmorrhages take place in the substance of the cord, which will be equivalent to permanent destruction of the medulla. True, injuries of the medulla indicate themselves by a discharge of spinal fluid, even if this

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sign is not marked. Now and then it happens that the actions of the respiratory and circulatory organs will be observed on the exposed portions of the spinal cord. In injuries of the meninges, prolapse of the cord has been rarely observed. The functional disturbances resulting from these injuries indicate the extent and proof of their existence and affect the motor, as well as the sensory and trophic phenomena.

Shot wounds of the neck have not been frequent in modern wars, but in view of the vital organs contained therein are of great importance (in the Franco-Prussian War they constituted 1.1% to 2% of all the wounded). Open wounds of the trachea and larynx are accompanied by the escape of air in expiration, emphysema of the tissues of the neck, disturbances in swallowing and speech, besides early evidences of carbonic acid poisoning. Ricochet shots which were quite common in former wars will be exceptional in the future. In penetrating wounds of the œsophagus the surgeon first discovers the discharge of ingested food from the wound; other signs are the escape of bloody mucous, partial or complete loss of the power of swallowing, and finally deep seated emphysema of the neck, which can extend inwards to the mediastinum. Injuries of nerve branches will be more or less easily recognized. In the occasional rare injury of the glosso-pharyngeal above all is loss of taste to be expected.

In the more frequent injuries of the pneumogastric nerve, are difficulty in swallowing, small pulse, depressed heart action and paralysis of the vocal cords.

Paralysis of the sympathetic in the neck shows itself by pupillary and vaso-motor disturbances and later on trophic symptoms develop (*hemiatrophia facialis*).

Injury of the branches of the brachial plexus is indicated by immediate, complete or partial paralysis of the arms, partial loss of sensation and also at times by intense pain in the nerves or increasing hyperæsthesia.

Shot Wounds of the Chest.—In the War of 1870–71, wounds of the chest comprised one-tenth of all cases treated in the Prussian armies (9598 in a total of 99,566=9.6 %).

We distinguish two classes, those penetrating the thoracic cavity and those which do not pass beyond the fascia of the

endo thorax (*Fascia Endothoraciæ Hyrel*). Wounds of the first class may involve simply the soft tissues or also the bony skeleton.

Of the latter "ringshots" are of particular interest. In early wars they were so rare as to be considered in the light of fables—but this was a mistake. Most certainly surgeons have deceived themselves in their diagnosis of "contour shots" but the sanitary reports of the War of 1870 mention 11 cases in which the shot channels were explored at least half of the way around. Whether the new bullets are in a position to cause similar encirclings has not yet been demonstrated. A remarkable feature of shot wounds of the chest is the fact that when the arms are raised, air is sucked into the tissues, producing emphysema of the skin—this applies particularly, however, to wounds of the muscles. If in shot wounds of the chest, not entering the pleural cavity, the contained viscera are not struck, yet they are often sympathetically shocked.

Lung concussion or shock is indicated by the following symptoms: pain, loss of strength and sense of fear, great prostration, difficult breathing, changes in the pulse, strong irritable cough with expectoration of bloody sputum. Another sign is emphysema of the skin, which first indicates itself in the sublaryngeal depression and finally hæmathorax, occurring immediately after the injury. Contusions or shock of bullets cause the most marked effects on the heart muscle, such as separation of the valves, tearing loose of the muscle from the great blood vessels, deep furrows in the heart muscle, etc. Such cases are, of course, beyond medical aid. The diagnosis of penetrating wounds of the chest, which in earlier wars constituted 25-53% of all wounds of the chest, must preferably be determined by external inspection, touch and above all from the general group of symptoms; for the direct exploration by probe or finger is never permissible, even under the strictest precautions. Not without the bounds of possibility are tangential penetrating wounds of the chest without injury to the contained organs. A case is reported by Klebs (*Beitrag zur patholog. Anatomie der Schusswunden*, 1872, p. 75).

The recognition of simple pleural openings during life is, however, very difficult, indeed almost impossible. Injuries of

the lung from small calibre bullets bear the following characters : as a result of the great elasticity of the tissues and of the high air pressure, the shot channels at all distances are uniformly cylindrical, smooth, narrow with an orifice of exit usually narrower than that of entrance. More serious complications present themselves under particular conditions, as in oblique wounds, the detachment of bone splinters, tearing of the larger blood vessels or bronchi and finally by the action of powder gases at close ranges. These wounds appear, however, to offer a favorable prognosis ; their diagnosis will be often determined from the position of the bullet wounds, but the diagnosis of these cases can only be decided upon when the patient is conscious and there are no serious disturbances. If the wound runs through the long diameter of the lung or is accompanied by considerable pulpification of the tissues, more or less dyspnoea is rarely absent. The assurance will be all the greater by the appearance of pneumothorax, bloody cough, and emphysema of the skin. The entrance of air into the pleural cavity is an almost constant accompaniment of these injuries, although in certain instances it is possible for the bullet to perforate old pleuritic thickenings without separating them, so that the air does not gain entrance into the general cavity. Then again by a displacement of the soft tissues, a closure of the external wound may result and the lung substance so close up the opening that a very rapid absorption of the air ensues, leaving no trace in the cavity. The surgeon may therefore consider pneumothorax a very important point in the diagnosis, but its absence does not necessarily exclude a penetrating wound of the lung.

If a large blood vessel is involved and the flow of blood outwards obstructed, it may accumulate in the thoracic cavity (hæmatorax) or both phenomena may occur, that is hæmorrhage from the external wound and into the cavity. If the external wound is not closed, blood flows out with respiration ; whether this emanates from one of the parietal arteries (internal mammary or intercostal artery) or the lung itself can be determined only by the anatomical relations. The consistence of the blood that is bright red or frothy, or lacking these characters must not be overestimated in the diagnosis. The next in

importance is bloody cough, the most characteristic sign. Yet in spite of injury to the lung itself, this sign may be absent if there is no direct communication between the wound and the bronchi.

The longer the hæmoptysis (expectoration of blood) continues, the richer it becomes, the greater the chances of lung injury. If the larger vessels are injured, and the bleeding points communicate with the larger bronchi, the patient may be imperilled by carbonic acid gas poisoning through the closure of the lumen of the tubes.

Fischer reported expectoration of blood in 23 per cent. of all shot wounds of the lungs in the reports of the Civil War in the United States (1861-65); it occurred 492 times in 8715 cases, and in the sanitary reports of 1870-71 on the German side alone in 467 of 1425 wounded of this class (32.8 per cent.) and in the remainder, involving simply breast and shoulder 8798, only 100 times=1.14 per cent. A rare occurrence in these shot wounds of the lung is emphysema of the skin. Hinnen estimates its frequency at 1.50, Neudörfer 1.200. In the American Civil War it is mentioned 38 times 1.229, but in the German war reports, on the other hand, it was emphasized 60 times in 451 lung wounds=1:7.5. A rapid, far-spread emphysema points always to injury of the lungs, while a circumscribed has often another causation. Prolapse of the lung, which was even formerly very rare in small-arm wounds, will be practically absent hereafter with the small orifices. Microscopic examination of the sputum should never be omitted, as elastic fibres or other lung fragments may be found.

Shot wounds of the abdomen, whose frequency has been quite uniform and small (in the American Civil War 3.3 per cent., in the Franco-Prussian War, 1870-71, on the German side, somewhat greater, 5.8 per cent.) are classified as those involving the abdominal parietes only and those entering the peritoneal sack.

As is generally known, concussion is apt to result in any injury of the abdomen. Not only are wounds of the walls responsible for intense shock, but the shock often leaves behind most dangerous traces on the viscera, with which it does not really come in contact (laceration of the blood vessels and

rupture of tissue). To the first group belong injuries of the skin and muscles, of the external sexual organs, of the pelvis and of the viscera outside of the peritoneal cavity. Now, penetrating wounds of the skin are necessarily not so dangerous. In former wars they were not so rare—in 1870-71 2839 cases were reported, that is 52.8 per cent. of the 5377 instances of wounds involving the lower part of the trunk.

In future we will not deal with many such cases, for the penetrability of the mantled bullet will find slight resistance even at long ranges in the abdominal walls. Only oblique and secondary shots would be such as would fail to penetrate and might remain in the abdominal walls. Shot wounds of the sexual organs have heretofore comprised a small percentage of war injuries. In the Crimean War, according to Cheyne, 0.6 per cent., in the Italian campaign 0.5 per cent., in the American Civil War 0.05 per cent., in the Franco-Prussian War 0.12 per cent. The most important clinical phenomena resulting from these lesions is shock or a condition of spinal exhaustion, as a result of peripheral disturbance of the nervous supply to the pendulous portion of the penis. Extravasation of urine may also eventuate. Shot wounds of the pelvis give the same symptoms as in other injuries. In the examination, it is of the utmost importance to determine accurately the secondary lesions of the pelvic organs.

The hydrodynamic action of the small calibre bullet creates, as in the glandular organs of the belly, a most intense destruction of the kidney tissue. From the crater-formed cavity in the kidney, extensive fissures radiate on all sides. Wounds of this organ are to be suspected when the point of entrance is in the loins and the shot channel has the corresponding direction and depth. In most cases there is considerable bleeding, shock and colic-like pains along the ureters, towards the head of the penis. If the medullary substance and the pelvis are involved, there is a considerable admixture of blood with the urine. Then some simultaneous opening into the peritoneum may occur, the urine gushing into the cavity, leading to a rapid acute peritonitis and death. The passage of urine through the wound does not always result immediately after the injury, but often later on.

Hæmaturia, the most frequent symptom, was observed in 50 per cent. of the cases in the American Civil War.

Wounds of the bladder will be recognized definitely by the passage of urine through the openings. Outside of this sign, which ensues sooner or later after the injury, there is inability to walk or stand, great prostration, pains in the abdomen, thighs, and kidneys and finally strangury; in the latter stages extravasation of urine may take place. The treatment demands above all restoration of the flow of urine and then, contrary to the usual rule, immediate removal of the ball. Simultaneous opening into the peritoneum offers a most unfavorable, often fatal prognosis, but as has been demonstrated, recovery can follow immediate suture. In lesions of the urethra, within the pelvis, there results first, retention of urine, which later on slowly trickles through the muscular openings.

Shot wounds of the gall bladder are very rare; they can be successfully treated by prompt laparotomy and suture, as in a case reported by Kehr, and in others whose history he reports. The discharge of bile is much more prompt than in wounds of the liver and the rapid occurrence of jaundice as a result of the prompt absorption by the peritoneum of the extravasated bile.

Injuries of the spleen show very similar symptoms to those of the liver; wounds of this organ are above all marked by a most profuse hæmorrhage, which generally kills before surgical aid comes. The situation and direction of the wound and the violent venous hæmorrhage aid in diagnosis. When the brownish brothlike fluid, however, contains particles of splenic tissue, the diagnosis is confirmed. Other signs are loss of voice or hoarseness, nausea and vomiting and radiating pains shooting upwards as far as the ear, and downwards toward the pelvis on the left side.

Wounds of the stomach agree in their general characters with those of the intestines, yet there is one antithesis in that the opening into the mucous membrane is more extensive and lacerated than the orifice of entrance. These wounds are usually associated with lesions of the other viscera, such as the liver, pancreas, lungs, spleen, intestines, etc. No doubt in diagnosis exists when gases or acid juices emerge from the bullet wound. Although this sign is positive, its absence does not preclude

wound of the stomach. Extremely dangerous and without value is the insertion of a probe, even under the strictest precautions; and the distention of the stomach by hydrogen gas is dangerous, in that it favors the escape of gastric contents and interferes with abdominal breathing.

Bullet wounds of the intestines are the most frequent, which is explained by the great extent of these organs. In the War of 1870-71, bullet wounds of the abdomen, with opening of the peritoneal sack, comprised not quite one-third of all cases of abdominal wounds, while with the mantled bullet they will be in the majority.

When important abdominal organs are struck, the mortality is greater, by virtue of their extraordinary vascular supply than in simple penetrating wounds, in the Franco-Prussian War being 69.5 per cent. to 9.1 per cent. This disproportion is also explained by the nervous supply and absorbing power of the peritoneum as demonstrated by Wegner, Graiotz, Ruchel and Ziegler.

While we do not often meet with simple uncomplicated cases of peritoneal wounds, yet the possibility has been clinically and experimentally proven. We know that it is even possible for a mantled bullet to pass directly through the abdomen, without injury to the omentum. The abdominal organs, however, lying directly in its path will never escape. The position of the shot and the occurrence of any great reaction are important in their recognition. Simple injury of the peritoneal sack can be suspected where all the usual signs of extensive destruction of the containing organs are wanting, or where the man has been struck by an indirect shot or portion of a shot.

When the intra abdominal organs are injured by a bullet, the utmost variety of symptoms may manifest themselves. On the liver the most extensive destruction of tissue results from the modern bullet, varying with the velocity of the ball. These wounds are extensive, presenting a stellate, lacerated orifice of entrance and a still greater orifice of exit, between which lies a craterform cavity with ragged walls. These terrible wounds occur up to a distance of 200 m. and will kill quickly by hæmorrhage. Such injuries are readily recognized by the

escape of liver tissue and later on by marked vomiting, swollen liver and bile stained skin. The latter symptom, according to Edler, is present in every fifth case.

The character of the wounds by the present infantry small-arms depends not so much upon the velocity of the bullet, as the line of flight, whether or not the intestine is full and whether its contents have escaped into the abdominal cavity and whether the intestine is perforated transversely, or along its long axis. The shot openings have an irregular form, varying in size between 3 and 15 cm. The destruction of the serous layer of the gut is, as a rule, greater than that of the mucous layer, although this is also greatly lacerated having raised edges. Infection of the peritoneum is hardly avoidable, for the contents of the bowels pass immediately into the cavity or later on are forced in by peristaltic action. Finally, the investigations of Hobart, Messner and La Garde show that the bullet in its flight through the loops of intestine, picks up infection and spreads the germs upon the peritoneum. The recognition of bowel perforation is quite easily made.

The following are positive signs: (1) Escape of intestinal contents and gas from the external wound. (2) Emphysema of the skin, starting from the external wound and decreased liver dullness, or its complete disappearance; the latter sign results from the distention of the abdominal cavity by gas. A new diagnostic means has been introduced by an American surgeon, Senn, which consists in forcing hydrogen gas into the intestine. As ingenious as is this test misgivings present themselves as to its adaptability, for the following reasons: It is valuable only in a positive sense, not as a negative one; it brings about the escape of feces, at times it is necessary to empty the rectum by enemata preliminary to inflation, and finally the gas by the hyperdistention may seriously interrupt breathing and the success of subsequent surgical operations. The differential points offered by the color and consistence of the extravasated fluids from intestinal wounds are very deceptive in locating the seat of the wound. Although it is useful to remember that in perforations high up in the gut, as in the duodenum, gall or acid chyme may escape from the opening. In wounds of the small intestine, the escaping fluid is thinner and clearer than that from the large

intestine, from which the thicker fæces pass out with the characteristic straining.

In the treatment of perforating wounds of the abdomen, two distinct factions exist—those who adhere to the old or expectant method, and those who believe in immediate operative measures (the so-called American method). It is most unfortunate for military surgery that these views are so diametrically opposed to one another. Now, it is not to be denied that theoretically, primary laparotomy has the fullest justification, and constantly gains more advocates. Of the rich literature devoted to this difficult problem, I would refer to Geissler's 100 year jubilee address at the Friederich Wilhelm Institute. This author quite logically discusses the indications and counter-indications for laparotomy, and concludes that the necessity for the operation is quite generally conceded when intra-abdominal bleeding or injury to the viscera are positive. The contending factions, however, argue on the one hand for delay, while the opposing school insists upon immediate laparotomy to decide upon the existence of injury to the abdominal contents. From this point, however, the subsequent course and methods agree. After opening the abdomen, the surgeon must make a careful inspection of the intestinal loops, which are readily recognized by their full blood-red appearance. In solving this problem, the surgeon must remember the great differences between the surgery of peace and that of war; in a well ordered civil hospital, there will be no lack of skilled assistants, necessary preparations and time, but at the principal dressing station of a battle-field, the conditions are far otherwise. There, it will be difficult to practice all the rules of antisepsis, and the surgeon must decide whether this difficulty will not prejudice the patient's chances, more than if the expectant method were followed.

It may, therefore, be laid down as an axiom in military surgery, that where no marked symptoms of visceral wounds are present, aseptic occlusion, suitable position and the arrest of involuntary movements of the intestines are indicated; and here it is to be hoped that by swelling of the mucous membrane and invagination, occlusion of the wound will result. But the surgeon must exercise rigid watchfulness in these cases, so as to be prepared to operate the moment dangerous symptoms supervene,

such as pain in the abdomen, distention and failure of heart action, as indicated by decreased volume and increased rate of pulsation.

Now it remains to emphasize the most indispensable points in the examination of the various tissues. In injuries to the skin, subcutaneous tissue, fascia, aponeurosis, tendons and muscles, the diagnosis is not difficult, as these tissues are exposed to view. Bullet wounds of the skin are more extensive at close range than at greater distances, but as a general thing are smaller in diameter than the calibre of the bullet.

Skin stiffly and closely adherent to bones suffers more than that which is in folds. Direct shots, entering with the point of the bullet, punch out a round opening, while oblique and slanting shots produce large angular orifices with torn edges. The orifices of exit in the skin decrease in size with the increased range; as a general rule, they are larger than those of entrance, and their form much more irregular.

The bullet canals in the muscles are mostly smooth and narrow, the last feature being in direct proportion to the range. When the bullet is diverted by contact with a tendon or bone, the orifices are more lacerated. The tendons are, as a rule, split by direct shots and torn by indirect.

Before mentioning wounds of the vessels, something may be said of those of the heart.

These will be merely of pathological interest, for those wounded in the heart will surely die on the spot. When the openings are simple, it is probably struck while in systole and at a great distance, but otherwise the hydrodynamic action is well marked in this organ. Shot wounds of the blood vessels are particularly important in war surgery, for prompt aid at the dressing station rescues many lives. Various authors differ greatly in their estimate as to how many wounded die on the battle-field from hæmorrhage alone. H. Fischer considers that more than 50 per cent. meet death in this way.

In the War of 1870-71, at least, death could not have been so frequent in this way, for of those remaining on the battle-field, only 2.6 per cent. had wounds of the extremities. In future wars, however, death from hæmorrhage will be greater, as the vessel cannot slip aside from the entering bullet and the

wound will be of such a character as to increase the hæmorrhage.

At close ranges with the new bullets, there is a complete destruction of the coats of the vessels, while at longer ranges, a portion of the adventitia may remain, by which the edges of the wound are held open. In battle wounds, besides the narrow wounds of the external coat of the artery extensive laceration of the internal coat may ensue. Those vessels running in the shaft of the long bones are apt to be torn by the fragments of bones, particularly at the orifices. Injury of the blood vessels will hardly be visible, through the narrow wounds of the soft tissues. In order to recognize them, we must be guided by the course of the canal and the direction of the shot. Other signs are of merely relative value in the diagnosis, such as injury of the nerves lying in the vicinity of the vessels, occlusion of the vessel, as a consequence of laceration of the coats, decrease of body warmth and of sensation and muscular power of the affected limb. The clinical signs of wound of the blood vessels, hæmorrhage, has not otherwise much weight. If prompt, free hæmorrhage occurs, there could not be much doubt, but in those hæmorrhages emanating from a depth, it will be difficult to locate the injured vessels, as the physiological characters are often concealed. More often the hæmorrhage comes from the arteries than from the veins. Next in importance to the bleeding itself is the recognition of its results, paleness, thirst, depression of the heart and body warmth, muscular weakness and vomiting; while the latter symptom, of course, results on the battle-field from other causes. Particularly important is it to discriminate between hæmorrhage and shock; in the latter consciousness usually remains, its entrance is usually sudden and the heart action often improves upon stimulation. In hæmorrhage, on the other hand, collapse increases in spite of stimulation. But the absence of hæmorrhage when the wounded man reaches the dressing station does not necessarily insure the integrity of the blood vessels. Conditions with the present ball are unfavorable to spontaneous closure of the blood vessels, such as smooth, sharp edges, which do not tend to roll in and the frequent presence of a band of adventitious tissue, by which gaping of the vessels is encour-

aged. Even definite statements of the patient and the absence of the evidences of bleeding on the clothing or dressings should not be accepted as a positive indication of its non-existence, for it must be remembered that in falling, the wounded man may offer an obstacle to hæmorrhage by the contraction of individual muscles. The condition of the pulse at the periphery is of only relative importance, for it may be absent, or may continually grow weaker, as compared with the pulse on the other side; the presence of the pulse, on the other hand, does not necessarily preclude injury of the vessels, as collateral circulation not being destroyed, quickly shows itself. It is evident that failure to recognize a wound of an artery will result in great peril to the patient; only complete restoration of the injured section of the artery can assist secondary bleeding or the danger of traumatic aneurism. Von Wahl has given us a sign by which we can recognize whether an artery is completely severed, or only partially cut. He found that where the blood passes through only one-half of the channel towards the periphery there is always a scraping murmur, synchronous with the pulse, which is absent when the artery is completely cut or when the wounded point is closed by a thrombus. The signs of bullet wounds of the larger peripheral nerves, outside of the direction of the bullet channel and the position of the wound, are as follows: pain, shock, localized pain of the wound and disturbances of innervation. As for the disturbances resulting from these injuries, it is not difficult to decide, particularly when the shot canal is in the vicinity of the nerve branch. It is more difficult, however, to decide when the disturbances of function lie at a point outside the course of the shot canal. To the determination of this question, electrical stimulation of the paralyzed muscles tells us how deep the injury of the immediately involved nerve is located.

Bones are often struck by bullets. In the War of 1870-71, 23.2 per cent. of the wounded sustained bone injuries. In the solid long bones, the potential force of the bullet is of less moment than the anatomical structure and firmness of the bone in determining the size and character of the wound. The splitting zone, that is the extent to which extensive fragmentation may result, is practically the same in the smaller bones up to a

distance of 2000 m., with this exception, that in close range shots the fragments are much more numerous, smaller and more devoid of periosteum than at greater distances. At distances beyond 2000 m., the shot canal even in the compact middle section of the long bones assumes a cavernous character. The destructive effects are greater, when the supporting superstructure is injured, such as occurs on the thigh and humerus, at the point of muscular attachment. This solid zone extends in the femur and the tibia practically 11-12 cm., in the less solid humerus 8-9 cm. As we have mentioned in wounds at close range, the individual splinters are torn completely from their attachment and penetrating the muscles beyond the orifice of exit lacerate it. The spongy bones and the soft ends of the large bones are at close ranges completely splintered. Injuries of the soft tissues complicating shot wounds of the bones are far different from the simple wounds of the softer parts. When the middle section of a long bone is struck, at the nearest ranges, quite usually at distances of 8.-600 m. and farther, manifold large lacerated skin openings are present, varying from 8 to 14 cm. in size. From these, muscles, tendons and detached fragments of bone present themselves. If at long ranges, the compact portion of the long bones or the ends of the bone or flat bones are struck, the orifices of exit are only slightly larger than those of entrance, mostly round, but stellate. The earlier bullets did not incline so to pendulation as the present mantled ball; striking with its point, it may be converted by an opposing body into an oblique missile. The bones mostly cause this deviation from the long axis, and not only grazing and slanting shots, but also those which pass through bony masses are thus affected. The so-called "turning over itself shot," in which the rotation still continues, although to a limited extent, has not only not reached the limit of its power, but has a most fatal action, as compared with the usual projectile, producing the most extensive laceration of bones, muscle and skin.

Gunshot wounds of the large joints are quite frequent in battle—in the War of 1870-71, on the German side they numbered 4079, 4.1 per cent. of all wounds requiring treatment. Wounds of the joints at distances of 700-800 m., particularly if the shot

is not oblique, offer a very favorable prognosis ; this would appear reasonable from the known effects of these bullets upon the spongy portions of bones ; the fragments limit themselves to the immediate neighborhood of the traversing shot and are mostly adherent. From 1600 m. on quite smooth holes are to be expected. Simple perforation of the capsule of the joint should be more frequent with the small than with the large calibre ball. For the recognition of these injuries we have mediate and immediate signs. The immediate points in the diagnosis, the location of the wound, the destruction of the joint tissues (escape of fluid, bony and cartilaginous fragments), inflammation of the capsule and loss of function. The mediate signs are pain in the joint and the position of the limb. If the diagnosis is not definitely determined by these signs, then a closer confirmation had better be dispensed with, rather than the condition be aggravated by further manipulation.

In joint and bone injuries appropriate for treatment there is no fundamental difference from the management of wounds of soft tissues. The cardinal principle of asepsis should be borne in mind and the surgeon should not dig for bones or foreign bodies before the application of the protecting bandage. There is more danger in untimely examinations than from the expectant treatment. In the safe conditions of hospital surroundings such surgical procedures are comparatively safe, but even here the use of the probe is to be restricted to those cases in which other methods do not give definite information and where better results in treatment would seem to follow. In no case should we probe simply to determine how much tissue is destroyed, or whether the ball still remains in the tissues. Every procedure undertaken without a definite therapeutic motive is a work of diagnosis at the cost of the patient. Entering a wound canal will in the majority of cases produce harm, particularly where there is a suspicion of wounded blood vessels, or where the canal enters one of the large cavities or joints.

We do not see now in bullets such carriers of sepsis as formerly, but can quietly wait until encapsulation occurs. Without subsequent infection from without this takes place almost always without irritation. The small size and smoothness of

the modern bullet are much more adapted for encapsulation (Mikuliz, v. Esmark, A. Köhler). Even the presence of fragments of shattered bullets should not be a justification for extensive exploration at the dressing station. The retention of the bullet is so much the less to be considered, for Schirmelbruch has shown that if the ball is infected, the germs pass into the general blood current in five minutes, so that disinfection after that time is useless.

If, according to the experiments of Henle and Messner, the conditions attending wound injuries are not so unfavorable, then it is certain that the possible benefit from removal can have no relation to the dangerous results of extensive probing and enlargement of the wound. It is certain that in the earlier wars more died from attempts to remove foreign bodies than from the missiles themselves. So that in the future, the search for bullets will occupy a subordinate place in the operative measures of the surgeon. As we have before shown, other foreign bodies (such as particles of clothing, etc.) are more dangerous for wound infection than the bullets themselves. The surgeon will therefore remove such objects from the wounds at the dressing station if they present themselves clearly at the wound openings. We have also seen that micro-organisms grouped upon these foreign bodies do not necessarily produce suppuration. In the search for such objects the same rules apply as in regard to bullets.

If these bodies cannot be found without further effort, then it is best for the progress of the wound to permit a slight rest. Moreover, it is in no way permissible, even if one suspects the presence of foreign objects, to fish for them with the fingers or instruments, or to tease the tissues. As we have hitherto spoken of fresh wounds, now it remains to be explained that in the latter stage of wound history, very accurate probing may be necessary, where suppuration or phlegmonous inflammation exhausts the patient. The retention of particles of clothing can be suspected where the discharge has a yellowish hue or when particles of cloth come away. Where in the exceptional cases, the surgeon is compelled to probe, he finds that he obtains better results with the finger than the hard probe.

The sense of touch helps to determine quickly the distinc-

tion between bone and metal. On the other hand, metal instruments are much more readily rendered aseptic than the hands, particularly at the dressing station; moreover, the majority of shot wounds from small calibre bullets will make a very narrow channel, through which the finger cannot readily pass, as the fascia grasps it and holds it firmly. Splitting of the canal, known in earlier wars as "primary debridement" must be unconditionally dispensed with, as it gives to germs both gateway and entrance. If it cannot be avoided, then sounding must be done as gently as possible, both for reasons of asepsis and the possibility of making false passages. To be highly recommended are thick button sounds or probes of soft pewter, which have the double advantage of flexibility, and are less apt to injure the soft tissues. When the finger is used it must be gently inserted and follow only the track of the bullet. In long canals with wounds of entrance and exit, the fingers may be introduced in both openings.

THE WAR IN SOUTH AFRICA.

(From weekly issues of the "Army and Navy Gazette.")

THE state of quietude that had existed for more than a fortnight at Bloemfontein was disturbed on the 29th ult. (March), when an engagement, of which intelligence was received after we went to press last week, took place near Karee Siding, twenty miles to the north beyond the Modder River. The enforced inactivity of the British had encouraged the enemy to assume an aggressive attitude, and to throw forward part of their force to a point fourteen miles south of Brandfort, whence more effective pressure could be exerted against the burghers in the vicinity who had returned to their farms, with a view to compel them to again take up arms. The Boers, 5000 strong, had established themselves on kopjes lying across the railway, and affording strong positions along a front some three miles in length. A superior force, consisting of General Tucker's (7th) Division, two brigades of mounted infantry, and the 1st and 3d Cavalry Brigades, with artillery, was sent forward to clear the kopjes, and, if possible, surround and capture the enemy's force. The action took the form of an en-

veloping movement. The mounted infantry, under Colonel Le Gallais, was directed against the left of the position, General French's cavalry against the right, and the two infantry brigades, under Generals Chermiside and Wavell, advanced on the centre. While wide detours were being made by the mounted troops to turn both flanks, the infantry brigades, covered by Kitchener's Horse, made a front attack under cover of the 74th and 62d Field Batteries. The action commenced with an assault by the 2d Batn. Norfolk Regiment on the left of the enemy's position, which they seized. The artillery shelled the main body holding a kopje on their right, and prepared the way for a gallant charge by the 1st Batn. East Lancashire Regiment, which cleared the position, and forced back the retreating enemy into a converging fire from the guns of General French's and Colonel Le Gallais' out-flanking columns. The Boers, however, effected their retirement in good order, and withdrew their guns with their usual skill. The kopjes that formed the position were very favorable to the defense, being in parts thickly wooded, and covered along their front by rough ground over which the troops, especially the artillery, moved with difficulty. Although no very serious loss was sustained by the enemy in this action, the victory conferred substantial advantages on the British in advancing their front some twenty miles to the north of Bloemfontein, opening the country as far as Brandfort, and covering the repair of the broken railway bridge over the Modder River.

While this action was in progress, the enemy was developing a well-conceived movement farther to the east along the British strategical front, which led to serious and deplorable loss to our arms, recalling the disasters of Stormberg and Colenso. The point whence the chief danger threatened was Ladybrand, where, since Colonel Pilcher's recent daring visit, the Boers were known to be in increasing strength. Ladybrand occupies the extreme right of the line passing from Jacobsdal in the west to the Basuto border in the east, and its occupation in some degree of force, as well as that of Thaba N'chu, is necessary for the complete security of the British right flank against such operations as those we are about to describe. On Friday, the 30th ult., Lord Roberts was apprised by General

Broadwood, who held the post of Thaba N'chu, thirty-eight miles east of Bloemfontein, with a mounted force, that the enemy were approaching in two columns from north and east, and that if hard pressed he would retire to the waterworks, seventeen miles nearer to Bloemfontein, where there was a British detachment. During the night he accordingly effected his retirement to Sanna's Post, situated near the Waterworks, between the Modder River and the Kloon Spruit. At dawn on Saturday he was shelled by the enemy, and was attacked simultaneously from three sides. Deploying his little force with admirable judgment to oppose the main advance of the enemy, he retired his two batteries with his baggage-train towards Bloemfontein. Two miles from the Waterworks the scouts passed through a drift, presumably crossing the Kloon Spruit, without perceiving that the banks concealed a force of the enemy, who allowed the train and guns to descend into the drift, and then opened upon them a murderous fire at short range. Seven out of twelve guns and the whole of the convoy were captured, and the total loss in the action amounted to 350 casualties, 200 being returned as missing. It would appear from the dispositions of the Boer forces that they not only advanced in force on Thaba N'chu westward from Ladybrand, and southward from the direction of Winburg, but also detached a commando from Brandfort, which established itself in an ambush in the Koorn Spruit on General Broadwood's direct line of retreat, and within twenty miles of Lord Roberts' headquarters. Serious as the loss proved to be, it might have been considerably greater but for the timely arrival, on Saturday afternoon, at Sanna's Post, while the action was in progress, of General Colville's (9th) Division, after a magnificent march from Bloemfontein, whence it was despatched with the utmost promptitude by Lord Roberts at daylight, followed by General French with two cavalry brigades. The enemy succeeded in destroying the Waterworks at Sanna's Post; but as there is a sufficient supply of drinking water at Bloemfontein from the springs, it is hoped that the inconvenience may not prove serious. General Broadwood's command consisted of the Household Cavalry, 10th Hussars, Q and U Batteries Royal Horse Artillery, and Colonel Pilcher's battalion of mounted infantry—in

all about 1400 men, a force that certainly was none too strong to hold the important flanking post of Thaba N'chu, thirty-eight miles from Bloemfontein, with a mobile enemy in considerable strength hovering about the country to both north and east within a two-days' march. The enemy's strength was estimated at 7000 men, with guns. It is a satisfaction to know that, notwithstanding the heavy odds against them, the troops acted with the greatest gallantry, Roberts' Horse and the gunners of Q Battery particularly distinguishing themselves. We had hoped, however, that past experiences in this war had rendered such surprises in carefully selected death-traps well-nigh impossible, by the exercise of a more thorough and intelligent system of scouting than at first obtained. Such details as have been received of the part taken by the Ninth Division and General French's cavalry on arrival on the field show that Colonel Smith-Dorrien's (19th) Brigade at once advanced to engage the enemy, who declined to come to close quarters and retired precipitately, but they are reported to have taken up a strong position in considerable force commanding the Waterworks on the right bank of the Modder River, whence they will doubtless be dislodged later on. Meanwhile the 9th Division and the cavalry returned to Bloemfontein, it being useless to attempt pursuit. There is reason to believe that the mobility of the mounted troops is still impaired through the want of fresh horses, but as there is now a steady flow of remounts to the front, this defect should soon disappear. The present aggressive movements of the Boer commandoes against the British advanced line are consistent with President Kruger's recent boast that he would recapture Bloemfontein, and their plan is in keeping with the usual Boer method of attack by means of enveloping wings making wide detours. Thus, while a force was advanced from Brandfort to menace Lord Roberts' centre, the enemy's left wing swooped down on the exposed right flank of the British at Thaba N'chu, and, preparatory possibly to a similar movement of the enemy's right, a commando is reported to be in position in the west at Paardeberg, near the site of Cronje's discomfiture. At the same time the appearance of laagers in the Barkly West district, as well as in the massing of Boers about Fourteen Streams and along the north bank of the

Vaal, are evidence of a desire to push south again in the direction of Kimberley and Jacobsdal, a state of affairs sufficient to account for Lord Methuen's recent and sudden recall to Kimberley from Barkly West. The increased aggressiveness on the part of the enemy, who have become more daring since their success on Saturday, may result in a general action being fought very shortly around Bloemfontein, in which the British commander would, for the first time in the war, have the great advantage conferred by interior lines.

From the rest of the theatre of war there is little to record. Rebellion has disappeared from the northeast of Cape Colony, the scene of General Brabant's recent vigorous operations, and that commander is reported to have occupied Wepener, on the Basuto border, moving from Rouxville, where his 1st Division was on the 30th ult. Had circumstances permitted General Brabant to push on rapidly in the wake of Olivier's retiring commandoes, Ladybrand might now be in Lord Roberts' possession. The general condition of the western districts is fairly satisfactory. With the exception of a gathering of farmers in arms at Upington, the rising in those districts has been suppressed by Lord Kitchener and Colonel Parsons, the former of whom is reported to have returned to Lord Roberts, after leaving a garrison at Prieska. General Clements, whose column came in touch with Bloemfontein on Tuesday, has been moving northwards through the western part of the Orange State, his left feeling out towards Koffy-Fontein on the Jacobsdal road. General Gatacre, based on Springfontein, the junction of the Port Elizabeth and East London lines, both dominates the south of the Orange State and keeps in touch with Bloemfontein, guarding the railway, which is said to be threatened by a commando near Springfontein, where an early action is probable.

At Mafeking all was well on the 27th ult. The investment continued, but the Boers had evacuated a portion of their trenches, the pressure on the town was less, and the outlook brighter. The garrison, bold and resourceful as ever, have nevertheless braced themselves up for a further prolonged wait if need be. Colonel Plumer, active still, had invaded the Transvaal to within twelve miles of Zeerust to threaten the commu-

nications of the force investing Mafeking, but, finding none of the enemy, had returned.

A rigid silence shrouds the doings of the Natal Army Corps. Sir Redvers Buller is said to be massing troops about his advanced posts at Elandslaagte, and to be obtaining 1000 water-carriers from India, which may be taken as signs of a probable early advance. Ladysmith has, as a precautionary measure, no doubt, been strengthened by the arrival of six siege howitzers of 6-inch calibre. The acquisition of these powerful pieces before the now historic siege began would have been of untold value. The importance of Sir Redvers Buller's forward position cannot be overestimated. Geographically it is sixty miles further north than Bloemfontein, and when the general advance recommences this fact cannot but have a disturbing effect on the commandoes operating in the Orange State. A new and interesting feature is developing in the extreme northeast of the great theatre of war. Beira, the natural port of Rhodesia, although belonging to the Portuguese, is about to be utilized again, as it was during the Matabele rebellion of 1896, for the debarkation of men and stores for Rhodesia, under treaty rights existing with the Government of Portugal since 1893. A portion of the Bushmen's Corps is now on its way from Capetown to Beira, and that port will probably be used for disembarking the force destined to operate in Rhodesia under Sir F. Carrington. The use of the port of Beira under this treaty will confer on the British advantages of the first importance, among the earliest of which will probably be found an unexpected means of relieving Mafeking. The distance from Beira to Mafeking, via Salisbury in Rhodesia, is not less than 1030 miles but, with the exception of some 270 miles between Salisbury and Bulawayo, the whole is traversed by rail. The general effect of this move on the operations of the war and on the dispositions of the enemy will be watched with the keenest interest.

THE HALT AT BLOEMFONTEIN.

The prolonged but unavoidable halt at Bloemfontein has had inconvenient consequences. The Boers, taking advantage of the apparent inability of the British commander to push his advance, have detached a part of their forces concentrating at

Kronstad, and, adopting the guerrilla method of warfare, in which they are adepts, have sent commandoes, lightly equipped, to overrun the whole southeast of the Orange State. This movement is having considerable success for the time being. To it must be attributed our disaster of the 31st ult. at Koorn Spruit, and that at Reddersburg on the 4th inst. Commandoes which suddenly reappeared, as if starting from the ground, attacked the portion of General Brabant's force which is at Wepener, on the Basuto border, on Monday, but were repulsed with loss. The fight was renewed on the following day; but the position being strongly entrenched and well provided with stores, no anxiety was felt for the safety of the defenders, who, Lord Roberts reported on Tuesday, "were holding out bravely." A commando was also posted near Aliwal North, apparently to keep reinforcements from reaching Wepener. There is no cause, doubtless, for disquietude. Lord Roberts holds a commanding central position at Bloemfontein with an army of 50,000 men, his numbers increase daily, and his line of communications is carefully guarded. Nevertheless, the capture of some hundreds of British infantry at Reddersburg, occurring but a few days after the loss of guns, train, and men at Koorn Spruit, gives rise to chastening reflections. These events afford direct evidence of the superior astuteness of the foe, the swiftness of his movements, the completeness of his information, the meagreness of our own, the unreality of the supposed submission of the Free Staters, the general inefficiency of our scouting, and the inadequacy of our arrangements for the support of detachments.

On the morning of the 4th, three companies of the 2d Batn. Royal Irish Rifles and two companies of mounted infantry were compelled to surrender after a gallant resistance lasting nearly twenty-four hours, their ammunition having been expended, and no relief being at hand. Returning to Bethany Station from De Wet's Dorp, forty miles east of the railway, where they had been receiving the arms of burghers, the hollowness of whose submission we are beginning to understand, they found themselves intercepted, and presently surrounded, by a very superior force with guns. They rushed a kopje and held it determinedly until all hope of relief had to be abandoned, and

surrender became the only alternative to annihilation. Bethany lies on the railway but eight miles to the west of the scene of conflict. It was the base whence the little column would look for support ; but at the critical moment none was forthcoming, and the British army is, in consequence, the poorer by some 500 brave and seasoned combatants. Reinforcements were, it is true, despatched by Lord Roberts' orders at the earliest possible moment, from both Springfontein and Bloemfontein, to Reddersburg and Bethany, but they arrived too late and in insufficient force. On the day following there came a seasonable if a small success, as a sort of solatium, though by no means a compensation for losses so serious in themselves and possibly preventable. Lord Methuen, with a mounted force of the Imperial Yeomanry and the Kimberley Mounted Corps, surrounded and captured, in the neighborhood of Boshof, a small body of the enemy commanded by the French Colonel de Villebois Mareuil, the able officer whose skill had served the Boers so well on December 15 at Colenso. The commander and seven others were killed, eleven were wounded, and fifty-one made prisoners of war ; not one of the little commando, which was composed almost entirely of mercenaries, escaped.

Wednesday, the 11th inst., saw the sixth month of the war run to its close. The present is an appropriate time, therefore, for a brief review of results so far, and of our present position. On October 11 the prospects of Cape Colony and Natal were well-nigh desperate. With less than 20,000 combatants in isolated posts hundreds of miles apart, the British stood at bay, while the enemy in resistless force poured over the borders flushed with visions of early and easy conquest. The stirring incidents and the checkered fortunes of the past six months are too fresh in the memory to need detail here. Natal, the garden colony, was overrun and plundered to within twenty miles of Pietermaritzburg ; Cape Colony for months suffered the indignity of invasion ; and rebellion was rife over a wide extent of country. For four anxious months, while our strength grew, the balance of advantage inclined to the enemy. The invasion of the Free State on February 11 caused the tide to turn, and during the month that followed our arms were carried steadily—at times almost impetuously—forward. Kimberley and Ladysmith were

relieved ; the invaders rolled back to the Biggarsberg ; General Cronje and 4000 Boers captured, and the capital of the Orange Republic occupied in force. The cost of these achievements in fighting men, though considerable in itself, has been by no means excessive in proportion to the admirable work done and the difficulties overcome. Viewed relatively to the great object to be secured—namely, the victorious and early termination of the war—the most embarrassing loss sustained has been in horses. General French's brilliant dash to Kimberley round Cronje's flank, and his subsequent rapid operations, culminating in the capture of Bloemfontein, were carried out at such a cost in horses that for a time the mounted portions of Lord Roberts' army were placed practically *hors-de-combat*. The loss of efficiency, though serious, was but temporary, and is rapidly disappearing. From the great remount establishment at Stellenbosch, near Cape Town, more than 10,000 English horses have been forwarded to the front, and upwards of 30,000 horses are coming from America, none too many to make good a wastage estimated at some 5000 a month. If it be true that these valuable animals are packed like bullocks in cattle trucks, and despatched without proper supervision for the journey, a great evil exists that demands immediate remedy, for it is no exaggeration to say that without a very large force of well mounted horsemen this war cannot be carried to a successful issue. The neglect of the Army Veterinary Department in past years has produced its result, as every cavalry officer well knew it would. We can only hope, however, that the lesson, costly as it promises to be, will be taken to heart at headquarters. So far as the strategical situation is concerned the offensive movement of the Boers southward has broken the British strategical line across the Orange State, the retreat from Thaba N'chu having left its right at Bloemfontein exposed. To the west the line has, on the other hand, been thrown forward by Lord Methuen's advance through Boshof towards Hoopstad. To restore the security of his line in the east Lord Roberts will doubtless when ready take steps to crush or roll back the raiding commandoes, and extend his right as far as Ladybrand.

Since the relief of Ladysmith the army of Natal has rested, with Colonel Burn-Murdoch's cavalry forming a screen to the

north beyond Elandslaagte, and that of Lord Dundonald reconnoitring in the west towards the Drakensbergs. The eastern flank has been covered by Colonel Bethune's mounted column, which on the 8th ult. advanced from Greytown with the object of seizing Helpmakaar, reported to be unoccupied. The enemy were, however, found there in force with guns and holding a strong position, and Bethune, having no artillery, retired after a sharp engagement. Signs of renewed activity on the part of the enemy in northern Natal are not wanting. On Tuesday a heavy cannonading took place from a position four miles north of Elandslaagte, which the Boers have recently occupied in advance of the Biggarsbergs. The British camp at Sunday's River was shelled, and the right flank threatened during a change of position. The attack was renewed on the following day without success. To afford means of giving an effective reply to this challenge, General Buller had sent forward some 4.7 in. and 6 in. guns, which eventually silenced the enemy and forced them to retire. The activity of the Boers is due to the continued inaction of the Natal army, which is guided, doubtless, by the state of affairs in the Orange State. It is there that the stress of the war is now most acutely felt, and a portion of Sir Redvers' force is being diverted, it is supposed, to the western sphere of operations to support Lord Roberts.

The latest news from Mafeking is dated the 30th ult., when all was well. On the 27th occurred the most vigorous bombardment of the siege, and an assault from two quarters was attempted but proved abortive, the enemy not caring to advance to close quarters. The garrison, oversanguine in their belief of a relieving column coming from the south, looked upon the attack as a final attempt of the enemy to take the place before abandoning the siege. Meanwhile the prospect of relief from the south appears to grow daily more and more remote, and the eyes of the gallant little garrison will possibly before long turn towards Beira as a more hopeful source of succor. Of Colonel Plumer's column we have definite news to the 31st ult., when he was heavily engaged with the Boers near Ramathlabama, six miles only from Mafeking. The place was then actually within sight, but he failed to reach it, being attacked by greatly superior numbers, before whom he was compelled to fall back

on his base with heavy loss, being himself among the slightly wounded.

With the reoccupation of Upington on the 5th inst., the western rebellion has apparently been stamped out, and Colonel Parsons has accordingly returned with his column from Kenhardt and Van Wyk's Vlei to Carnarvon. Beira has become a new centre of activity. Troops and stores are daily arriving there from the Cape and the Australian colonies, and Sir F. Carrington is on his way thither to take up his command. The 8th Division, commanded by Sir Leslie Rundle, acting under fresh orders, has been diverted from the western line to Springfontein, in consequence of the unsettled condition of affairs on the flanks of the central railway. As the long halt at Bloemfontein draws to a close, no effort is being spared to render the position of Bloemfontein and its line of communications with the south absolutely secure.

THE MILITARY SITUATION IN SOUTH AFRICA.

On Wednesday Lord Roberts' despatches, dated February 13, from the Camp, Dekiel Drift, Riet River, relative to the operations between January 17 and 24 for the relief of Ladysmith, which ended with the retirement from Spion Kop, were published. They have come as a surprise, and are not pleasant reading. The Commander-in-chief in South Africa, commenting on the operations, distinctly blames the action of the general commanding the army in Natal, as well as that of two of his subordinate officers, Sir Charles Warren and Lieut.-Colonel Thorneycroft, who took prominent parts in the operations referred to, and who were responsible for the abandonment of Spion Kop. Without for a moment questioning the correctness of the judgment passed by the Commander-in-chief, and, believing in the light of it that serious faults were committed, we much doubt the wisdom of giving it to the world at the present time. The importance of upholding the character and prestige of an army in the field, of fostering in the subordinates an unshaken confidence in their leaders, and, above all, of safe-guarding discipline, might have suggested the inopportuneness of the publication, three months after the events, of these adverse comments on the actions of the general commanding the army

and of others, all of whom still—so far as is known—hold their commands, and apparently possess the entire confidence of those under them. In view of the depressing effect likely to be produced on the army in Natal by the publication of these despatches, already, no doubt, communicated to Sir Redvers Buller with Lord Roberts' strictures, the telegram of a war correspondent from Ladysmith, dated Tuesday, the 17th, stating that the condition of affairs in that part of the theatre of war was one of "absolute lifelessness," need cause no surprise.

The long pause in the operations rendered necessary by the needs of the troops still continues. As a result there has been for some time a growing restlessness among the enemy, which may account to some extent for the great raid through the south-east of the Orange State. That movement in which 12,000 burghers, dispersed in roving commandoes, have been taking part, was in itself a bold conception, though attended by considerable danger. Besides satisfying the craving of the enemy for activity, without which it would be difficult to keep the burghers in the field, it has served many purposes. Two distinct successes over the British have been scored at Koorn Drift and at Reddersburg; the most fertile portions of the Orange State have been overrun, and large supplies of food secured for the replenishment of the fast-dwindling stores at Kroonstad; many burghers who had taken the oath to take up arms no more against the British have been forcibly commandeered; commandoes have advanced almost within striking distance of Lord Roberts' line of communications, and the northern border of Cape Colony; a part of General Brabant's colonial force under Colonel Dalgety has for many days been invested at Jammer-berg Drift near Wepener on the Basuto border; and the hope has been raised in the burghers' breasts of recapturing Bloemfontein by luring away the British from its neighborhood to chase the raiders through country of their own choosing. Notwithstanding the two successes referred to and the destruction of the Bloemfontein waterworks, the results so far must have proved disappointing to the enemy, and may prove disastrous to some of them. The capital and the southern railway, its great artery of supply, are now held securely by an overwhelming force, and any movement against them to

be effective must give more evidence of dash, vigor, and concerted action than can be traced in the recent movements of the raiding commandoes. Since the attack on Wepener commenced, and especially since the spirited sortie on the 10th inst. of Colonel Dalgety's men, when severe loss was inflicted on the Boers, public interest has been divided between this place and Mafeking. On Saturday the attack was slackening, and on Monday it was prematurely reported that the Boers, abandoning further attempts to capture the position, were trekking, the Transvaalers going north, and the Free Staters, some 6000 strong, making apparently for Bethulie on the southern border. Lord Roberts has, however, since reported that the force at Wepener was still surrounded, but that the attack was very half-hearted, the enemy being apprehensive about their own security, as relief columns were approaching from two quarters. General Rundle's (Eighth) Division was marching due east from Reddersburg, and General Brabant, with the remainder of his force, followed by General Hart's Brigade, lately arrived from Natal, in support, was coming from the south via Rouxville. In addition to these converging forces, General Chermiside's Division moved on Saturday to Marshoutfontein, seventeen miles east of the railway, watching a commando near De Wet's Dorp, and covering General Rundle's left flank, while the railway itself was held in their rear at Bethulie Station by General Knox's Brigade in support. A belated report, dated on Monday, has been received announcing the seizure of De Wet's Dorp by the British, but the report needs confirmation. The proximity of Wepener to Basutoland is a source of increased uneasiness to the Boers, who, having completely invested Colonel Dalgety's position, have the Basuto border close behind them to the east. The struggle is being watched with keen interest by 3000 of the warlike Basutos, massed within their border to resist any encroachment by the Boers on their territory. As the British advance each day adds to the insecurity of the Boers' position, we shall probably shortly hear of a hasty trek northwards from Wepener along the eastern border, and that the enemy have again succeeded in eluding our forces with their habitual dexterity. From Bloemfontein to Ladybrand, between which place and

the border the trek would probably pass, the distance is nearly eighty miles. Ladybrand is strongly held by the Boers, who have also detachments at Thaba N'chu and to the southeast of the capital, so posted as to screen a withdrawal of their commandoes from the south. Lord Roberts would hesitate to detach his newly-horsed mounted troops, and no others would be of much avail, on an exhausting expedition to attempt to cut off the retreating raiders, on the eve of the more important movement of the entire army towards Pretoria.

While the armies in South Africa await the order to advance, a glance at their actual fighting strength may be useful. In the aggregate the British and Colonial forces, combatant and non-combatant, now number but little short of 200,000 men. They are distributed over a front of some 300 miles, stretching from Warrenton in the west to Elandslaagte north of Ladysmith in the east, and they guard nearly 1800 miles of railway, of which about 165 miles traverse the recently conquered territory in the Orange Free State, from Karee Siding to the Orange River. Lord Roberts' fine army, holding the central area of the theatre of war, comprises six and a half divisions of infantry, one of cavalry, and one of mounted infantry. It is posted round Bloemfontein in convenient camps, and occupies besides, certain strategic points affording ready means of concentrating for defense of the lines of communications. Its approximate fighting strength reaches nearly 60,000 combatants with 216 guns and howitzers of the Royal Artillery, giving a proportion of $3\frac{1}{2}$ guns per thousand fighting men. There are also a few naval 12 pdrs. and 4-7 in. guns and part of a siege train. The army of Natal, holding a forward position in the eastern area of the theatre of war, consists at present of three and a half infantry divisions, three cavalry brigades, one brigade of mounted infantry, and corps troops. Its numbers so far as can be ascertained about 36,000 combatants with ninety-six field guns and howitzers, giving a proportion of about $2\frac{3}{4}$ pieces per thousand men in the fighting line. There are, however, in addition, a considerable number of naval guns, which more than compensate in the superior power of the ordnance for the low proportion of land service guns. In the extreme west, Lord Methuen has under his orders, and distributed be-

tween Boshof, Jacobsdal, Kimberley, and Warrenton, some 14,000 combatants. About 35,000 combatants, composed of Militia and Colonial troops, protect the railways of Cape Colony and Natal, and hold towns requiring garrisons. The columns commanded by General Brabant, Colonel Parsons at Carnarvon, and Colonel Plumer, together with the garrison of Mafeking, complete the total fighting strength, which, great as it is, has not yet reached its maximum, and an entirely new force now landing at Beira will shortly form a fresh element of strength, not alone by its numbers and mobility, but by the strategical position it will occupy.

There has been no fresh development at Elandslaagte since the 11th inst. The Boers hold a series of strong positions on the ridges lying between Sunday's River and Dundee, in expectation of an attack along the line of the railway. Parties still attempt to work round the British right flank, but the attack of the 10th on that flank is supposed to have been a feint to cover a move towards Van Reenan's Pass to prevent any attempt on Sir Redvers Buller's part to open a passage through the Drakensbergs in the Harrismith direction. Restlessness is apparent in the enemy's ranks on the Biggarsberg as it is at Kroonstad, and their patrols push out towards the British lines with considerable boldness. One was reported on Sunday near to Dewdorp, ten miles west of Ladysmith, and another from Waschbank succeeded in destroying the colliery works near Wessel's Nek within five miles of Elandslaagte. The strength of the enemy is said to be 15,000, but any serious movement on their part to the south is barred by the occupation of Jonon's Kop on the left, and of Lombard's Kop and Umbulwane Mountain on the right of the British strategic line.

Up to the 11th inst. things went fairly well within the beleaguered trenches of Mafeking. A recent bearer of news from the town was Lieutenant Smitheman, of the Rhodesian Regiment, who with much boldness and adroitness, succeeded in passing both in and out of the town through the Boer lines. The courage of the little garrison was still undaunted, but spirits were less buoyant, as the pinch of hunger was being felt, and hope of early release was fading from view. Colonel Plumer's force is strongly entrenched to the northwest of the town,

bnt his efforts to reach it have been effectually blocked by the Boers, who in considerable numbers dominate the country as far south as Fourteen Streams, whence they continue to shell the British on the opposite side of the Vaal at Warrenton. Although rebellion has been quelled throughout Cape Colony south of the Vaal, the efforts of the enemy to rekindle it have not ceased. General Settle has reported from Kenhardt that 200 Boers attacked Dopas Poort on the 13th inst., and were repulsed with heavy loss. Sir F. Carrington has arrived at Beira. The Australian Bushmen precede him to Salisbury, whence he is expected to push on to Mafeking. His mission is a most important one, and we wish it all success. Meanwhile, a force of 250 Boers is reported to be striking north from the Transvaal to intercept him. In the interest of the whole of South Africa it is to be hoped that the protracted delay at Bloemfontein will speedily terminate, and that the army there, renewed in strength, and under propitious skies, may again set forward.

THE RAID IN THE ORANGE STATE.

The great Boer raid to the south, across the right flank of the British army at Bloemfontein, has brought about a series of important and interesting operations culminating on Tuesday night in the flight of the enemy from both Wepener and De Wet's Dorp. The main objects of the Boers in thus sweeping with a sort of haughty defiance past Lord Roberts were not very clearly defined. They were apparently partly predatory, to gather in stores and commandeer reluctant burghers, partly strategic in the hope of a chance success against the railway, or against British detachments gathering in arms in districts prematurely supposed to have submitted. At length, however, by force of circumstances the enemy's purposes became focussed on a definite object, the capture of Wepener. In the face of daily increasing risk they stubbornly maintained a struggle around that place, in the hope of making prisoners of the gallant Colonial force that for more than a fortnight held its own there against heavy odds. The Boer commandoes taking part in the investment, or facing the approaching relieving columns coming from west and south, are stated to have numbered from 8000 to 10,000 men with fifteen guns. This powerful force of mounted

men had its main body in the vicinity of Wepener, under General Olivier, where it possessed the advantage of interior lines as against the relief columns, while a strong supporting commando, under General De Wet, at De Wet's Dorp, twenty-five miles to the northwest, threatened the left flank of General Rundle's British division marching across country from Reddersburg to raise the investment. General Rundle's force, advancing by way of Rosendal and Oorlogspoort, came on the 20th inst. in contact with the enemy occupying a strong position across the road four miles to the southwest of De Wet's Dorp. After a brisk engagement, in which the Yeomanry and mounted infantry under General Brabazon bore the chief part, the enemy's position was taken by a turning movement to the east. On Saturday, the 21st, General Rundle entrenched the position he had taken, awaiting the arrival of reinforcements, while his mounted force reconnoitred round the left and rear of the enemy's new position. Owing to the recently prevailing rains the country, which is practically roadless, was extremely heavy for wheeled transport, and General Rundle's progress had not exceeded ten miles a day.

While these events were maturing in the south Mr. Steyn issued from Kroonstad an impassioned appeal to the burghers to maintain the struggle pending relief by the intervention of some great Power, and at all costs to hold the rich grain-producing districts of Wepener, Ladybrand, and Ficksburg. The Boers to the north have hitherto preserved a watchful attitude, their general disposition having gradually assumed the favorite crescent form until it half encircled Bloemfontein, and reached as far as Leeuwkop, sixteen miles to the southeast of it, covering the movements of troops and convoys passing between Winburg and De Wet's Dorp. A British force, 6500 strong, posted at Springfield, eight miles east of the capital, kept watch on the enemy eastwards. Meanwhile General Brabant's advance guard reached the enemy's position on Bushman's Kop, eighteen miles south of Wepener, on Saturday evening. He was then between the Caledon River, which is in flood, on the left, and the Basuto border on the right; to the front fairly level ground lay before him to Wepener. The enemy at De Wet's Dorp being in considerable force, Lord Roberts on Sunday despatched

General Pole-Carew's (11th) Division from Bloemfontein, with two brigades of cavalry under General French, to assist General Rundle, and take the enemy's position in rear. This column reached Kareefontein and Leeuwkop, southeast of the capital, the same day. Leeuwkop, which the Boers had for some days held in moderate force, was cleared of the enemy, who trekked to the east after offering considerable resistance, leaving a quantity of ammunition and rifles in our hands. The 11th Division with the cavalry continued their advance on Monday as far as Tweede Geluk, some twenty-four miles northwest of De Wet's Dorp, without serious opposition. General Brabant's column, coöperating further to the east, had a desultory engagement on Monday with the enemy, holding Bushman's Kop, and commanding thence the left of his line of advance. By a vigorous movement he turned the flank of the Boer position, which was evacuated, and pushed on to a point within eight miles of Wepener, keeping his right close to the Basuto border. During the day the garrison of Wepener had been almost unmolested; but on Tuesday a determined, though futile, assault was made on the northern face of the defenses. Still further developments took place on Monday in the reoccupation of the Bloemfontein waterworks at Sanna's Post by General Ian Hamilton's mounted infantry, and the seizure by General Maxwell's Brigade, detached from the 7th Division at Karee Siding, of the hills covering the wagon bridge over the Modder at Kranz Kraal, an important point of passage about eight miles east of the railway. As the enemy still remained in some strength in the hills about Sanna's Post, Lord Roberts despatched the 9th Division eastward in support of General Hamilton. By these movements the various portions of the British army in the Orange State were skilfully disposed, in a manner offering mutual support, over an irregular front of about seventy miles, lying between Karee Siding north of Bloemfontein and Wepener, and facing generally to the northeast the natural line of advance.

On Tuesday General Brabant made but little further advance, the Boers having returned during the night and faced him with a determined front, while they renewed their attack on Dalgety's entrenchments. On the same day General Pole-Carew with the 11th Division made more satisfactory progress.

Driving the enemy before him, he reached Roode Kop, fourteen miles from De Wet's Dorp, in the evening, General French's cavalry pushing on further to the east towards the Modder, and halting at Grootfontein, in order next day to get athwart the Boer line of retreat on Thaba N'chu. The result of these dispositions was decisive. On Wednesday morning both De Wet's Dorp and Wepener were found to have been evacuated by the enemy, who were in rapid flight towards Thaba N'chu and Ladybrand. General Chermiside's (3d) Division at once occupied the former place and General Brabant the latter. Lord Roberts is now free again to move his columns forward, which he will probably do by swinging round his front to the north, pivoting his left on Karee Siding. General Rundle took up the pursuit of the enemy, and no serious opposition was likely to be met with before reaching Thaba N'chu and Ladybrand. Day by day the operations continue. On Wednesday General Ian Hamilton drove the enemy from Israel's Poort beyond Sanna's Post, and advanced on Thursday towards Thaba N'chu. News of a combined attack on that place from both west and south may be hourly expected, as well as of the arrival of Generals French and Brabant before Ladybrand pursuing the flying Boers from Wepener.

While it is pleasant to record the methodical and successful strategy of the past week, it is disappointing that the enemy should have so completely eluded the efforts made for their capture, at least in part. The result, however, is what we expected, having regard to the extreme sensitiveness of the Boers about their lines of retreat, and their still superior mobility.

Lord Methuen, acting under orders, drew in on Saturday his advanced force from Zwartkopjesfontein to Boshof, a distance of twelve miles. During the operation his column was fiercely attacked by some 2000 Boers with guns, and his convoy, which extended over six miles, was in some danger, but its withdrawal was successfully covered by a portion of the Kimberley Mounted Corps and the Yorkshire Hussars. The reason for this movement has not transpired, but it is possible that an attempt may have been intended to cut the force from its base at Kimberley, as a commando was reported on Sunday to be near Frankfort, halfway between Kimberley and Boshof, but a reconnaissance

failed to discover any traces of the enemy in that quarter. Lord Methuen, based on Kimberley, remains at Boshof, awaiting the turn of events in the southeast, and keeping a watchful eye on the Boer commando in his neighborhood under the younger Cronje. The Boers at Klipdam have been entrenching their position, which is one of importance, commanding the drifts over the Vaal in the Barkly West district. The enemy are evidently to be found in considerable force along the entire strategical front. According to recent intelligence from Lorenzo Marquez they are now credited with a total strength of 80,000, of which 50,000 are in the Orange State, 15,000 in the Fourteen Streams and Klerksdorp districts in the west, and 10,000 in the Biggarsberg and Drakenfels Mountains. The true total strength of the Boer forces will probably never be known, but, judging by their almost ubiquitous character, due in great measure to their marvellous mobility and the force they suddenly develop at every threatened point, it would be unwise to adopt a low estimate of their numbers as a basis in calculating the required strength for their subjugation. The usual plucky message that all was well left Mafeking on the 10th inst. Accounts, however, go to show that the feeling of depression caused by disappointed hopes is on the increase. Apparently no relief column is as yet endeavoring to reach the place from the south, nor has it been possible hitherto to detach a force sufficiently mobile and strong to make its way successfully through the commandoes of the enemy that hold the country north of the Vaal. Hope of relief now rests chiefly on the success attending Sir F. Carrington's expedition from Beira. Time will show whether that hope rests on a sure or a shadowy foundation.

THE MILITARY SITUATION IN THE ORANGE STATE.

Lord Roberts' strategic line lay, on Wednesday, the 25th ult., southeast from Warrenton on the Vaal to Wepener, resting on the Basutoland border. It crossed the railway at Bloemfontein, and covered approximately 170 miles. The raiding commandoes which had lately held undisputed possession of the south-eastern districts, and had penetrated with singular boldness and rapidity almost to within striking distance of our posts

along the Orange River, were then in full retreat northwards from De Wet's Dorp and Wepener in the direction of Thaba N'chu and Ladybrand, with the British in pursuit. As a military operation, the converging advance of Lord Roberts' columns from south, west, and northwest has been a distinct success, and the raising thereby of the investment of Wepener, which place the Boers had marked as their own, caused throughout the enemy's ranks a bitter disappointment that no doubt neutralized, to a great extent, the encouragement they had derived from their successes at Koorn Spruit and Reddersburg. To expect the capture of any but a small fraction of the Boer forces was to be over sanguine, and the fact that the bulk of the raiders, retaining their organized formations, have entirely eluded the British commanders need cause no surprise. While Thaba N'chu continued to be held by the enemy, and an open road ran northeast from Wepener to Ladybrand, it was not possible to complete the investment of the raiders, or to prevent their escape. But the improvement in the military situation due to the operations has been considerable. The great Boer incursion southwards has been swept back, and the right flank of the army of occupation is being made secure preparatory to the general advance towards the Vaal which has been so long awaited.

Lord Roberts, pushing out his right, has reoccupied Sanna's Post, retaken the waterworks, driving the enemy from the neighboring hills, and again placed a force in Thaba N'chu. On the 26th ult. General Smith-Dorrien's Brigade occupied the town, the Boers retiring thence in the direction of Ladybrand, having fought a rearguard action with General Hamilton on the 25th at Israel's Poort, in which the Canadian regiment bore itself most gallantly. On the 27th General Rundle's Division reached Thaba N'chu, pursuing the enemy from De Wet's Dorp. A strong commando was then in position ten miles to the east on the road to Ladybrand, our mounted troops being in contact with them. General Pole-Carew returned on Sunday to Bloemfontein with his division, having performed excellent service during his march to De Wet's Dorp, not the least important part of which was his prompt action in dealing with burghers who had violated their oaths and taken up arms

again. It is absolutely necessary for the security of the British communications that the disarmament of the fighting burghers left behind as the army advances should be real, and, as far as possible, all means removed by which the occupied country might become again the hunting ground of armed raiders. It was reported on the 27th, three days after the general retreat began, that small commandoes, numbering in the aggregate about 1000 men, were still roving the country in the Smithfield and Rouxville districts. The prompt action of General Pole-Carew will have a salutary effect, and these commandoes will probably melt away, the burghers returning to their farms to escape, if possible, the deprivation of horses and cattle as well as of arms, to which they have rendered themselves liable. During the recent operations the most onerous part of the work, because the most rapid and continuous, fell to the mounted troops. Once again in this war it has been amply demonstrated that on them the British Commander-in-chief must mainly rely for successfully coping with the Boer commandoes, not only when they are caught in the open, which they very rarely allow themselves to be, but when they occupy their entrenched positions, provided only that the mounted force is in sufficient strength, and that the positions can be turned by manœuvring such as that in which General French has shown himself to be a master both in the district around Colesberg and since the invasion of the Orange State. The horse is perhaps the most important factor in this war. Already since the commencement of hostilities the waste in horse-flesh has been phenomenal, to be measured best by the fact, as stated by Mr. Wyndham in the House of Commons on the 26th ult., that since the year began some 42,000 remount horses and 23,000 mules had been bought, and of these about 44,000 had been shipped to South Africa during the first four months of the year. When these vast numbers are faced it must be confessed that the impulse—that comes so readily—to find fault on account of administrative shortcomings is to a great extent disarmed, yet it must be patent to all who follow the fortunes of the campaign, that the subsequent care of these valuable animals has not kept pace with their numbers, the glaring insufficiency of the veterinary department having become a familiar theme with the war

correspondents. Although the enemy fell back from the town of Thaba N'chu on the advance of the British, they remained on a range of hills in the vicinity stretching from northwest to east of the place, having been reinforced by the fugitive Boers from Wepener. Their position, reconnoitred by General French's 3d and 4th Cavalry Brigades to the east and by General Hamilton to the northwest, was found to be one of great natural strength. Based on this position the enemy on Saturday and Sunday assumed the offensive, and persistently assailed our troops around Thaba N'chu; but the position occupied by General Rundle's (8th) Division, covering the camp and facing the Boers to the east, was successfully maintained at all points. Fighting has continued daily since the 27th, and on Saturday the Boers again fell back on a fresh position to the northeast, both their flanks having been turned. On Sunday the Boer attack was directed against the British flank with the object of seizing a pass through the mountains and cutting off a convoy, but General French in his turn attacked the enemy also in flank and checked their advance, forcing them to retire under cover of darkness. General Brabazon on the same day returned to Thaba N'chu from Wepener with a strong force of Yeomanry. On his way he helped to rescue a convoy coming from De Wet's Dorp, which was hard pressed by a raiding commando, and, but, for this timely aid, might have fared badly. Generals Hamilton and Smith-Dorrien occupied on that day a strong position across the road leading north to Winburg. By these dispositions three brigades of infantry, two of cavalry, and a force of mounted infantry, about 18,000 men in all, were posted about Thaba N'chu preparatory to further movements against the enemy's position.

On Tuesday, General Hamilton, strongly reinforced, fought to a successful finish an action commenced on Monday in the vicinity of Houtnek, twelve miles north of Thaba N'chu. The position held by the enemy was simultaneously attacked in front and flank and threatened in rear, and a passage cleared for a further advance northwards. The enemy dispersed to the north and east, but continued to maintain their hold on the hills eastward of Thaba N'chu. On the same day, in order to still further open the way for a general onward movement, three kopjes to

the east of Karee Siding, Lord Roberts' advanced post, were assailed by Colonel Henry's mounted infantry. The Boers offered a stout resistance, and deploying into the open plain under cover of their guns, contrary to their habit, boldly attacked the British, with the result that they were speedily repulsed with loss. Having received reinforcements they renewed the fight, with temporary success, but the timely coöperation of General Hamilton with his mounted infantry from the direction of Houtnek, and of General Maxwell's infantry brigade, forced the Boers back on their main position, and the three kopjes—the objectives of the day—were captured. There was a large admixture of foreigners in the enemy's ranks, which may account for the change in their tactics. The operations were directed by Lieut.-General Tucker. The actions above recorded are clearly indicative of the commencement of Lord Roberts' advance, and also afford striking evidence that the fighting power of the enemy is still far from being broken. The Boers evince the greatest reluctance to leave the rich grain country eastward of Bloemfontein, and still keep a firm grip on Ladybrand and its surrounding mountains. Their hold to the country is not likely to be of long duration. The 11th Division, composed of the Guards and 18th Brigades, marched out of Bloemfontein on Tuesday. Some 40,000 troops, comprising the commands of Generals French, Pole-Carew, Ian Hamilton, Tucker, Kelly-Kenny, and Colville are now disposed to the north and northeast of the capital, on a front of some thirty miles stretching from Karee-Kloof through Vlakensfontein to Jacobsrust. The forces have received their winter clothing and remounts, and their general disposition shows that important developments may daily be looked for. Meanwhile, on Wednesday, General Hamilton, after seven days' fighting out of ten, was halting for a day's rest in camp, five miles west of Houtnek, at Jacobsrust, by order of Lord Roberts. In the neighborhood of Kimberley the enemy show increased enterprise, emboldened by our want of activity. They have taken possession of the small town of Winsorten, beyond the Vaal, a place but eight miles west of the railway, and lying sixteen miles to the southwest of the British camp at Warrenton. From Natal, where Sir Redvers Buller holds 10,000 Boers in idleness in their mountain positions, there

is nothing to record save the arrival of militia to form a garrison for Durban. Sir Frederick Carrington has left Beira, where he was accorded an excellent reception by the Portuguese authorities, and has reached Marandellas where his force of Colonials is collecting, and whence his westward march will commence. Whether his immediate objective be Mafeking or the Transvaal border, his progress cannot fail to relieve, directly or indirectly, the pressure on Colonel Baden-Powell. The news which reaches us as we go to press that Lord Roberts has now occupied Brandfort is all important, for it marks a distinct step in the direction of Pretoria.

THE ADVANCE FROM BLOEMFONTEIN.

After a prolonged but unavoidable halt of seven weeks, Lord Roberts' army resumed its northward march towards Pretoria on Thursday, the 3d inst. The day was signalized by the occupation of Brandfort, thirty-six miles north of Bloemfontein, and fourteen miles from Karee-Siding, the most advanced post of the British for some weeks previously. This success, gained with but trifling loss, was the result of a brilliant series of operations, commencing on the 23d ult. with the capture of Sanna's Post by General Ian Hamilton, and including the actions of the succeeding days, by means of which a British force had been thrust, at Houtnek and Jacobsrust, between the strategical positions held by the enemy on Thaba N'chu Mountain and at Brandfort, forty miles apart. While General Hamilton's force rested at Jacobsrust, the 7th and 11th Divisions, commanded respectively by Generals Tucker and Pole-Carew, with the 1st Brigade of Mounted Infantry under General Hutton, advanced northward from Karee-Siding so disposed that the mounted infantry covered the left of the attack, the 7th Division the right, and the 11th Division marched directly on Brandfort. The enemy appear to have been taken by surprise, and after a sharp artillery duel at short range, beat a hasty retreat to the line of the Vet River, eighteen miles to the north. The capture of Brandfort was followed automatically by the retirement northwards of a great part of the Boer force in position on Thaba N'chu Mountain, a smaller portion moving towards Thaba Pachoa in the southeast, apparently to

face General Brabant who was seeking to approach Thaba N'chu, and join hands with General Rundle, still watching the Boer position, which was not yet entirely vacated. Lieut.-General French parted company from Sir Leslie Rundle on the 3d inst., moving towards the north. On the 4th Lord Roberts' headquarters were at Brandfort. General Hutton's Mounted Infantry and Colonials were then well to the front approaching the Vet River, which crosses the railway twenty miles north of Brandfort. Further to the east Ian Hamilton moved his mounted force towards Winburg, and by the prompt and bold action of his cavalry, prevented the junction of the two wings of the enemy opposing the British columns.

On Saturday, a day of marked progress, Lord Roberts marched with General Pole-Carew's Division twenty miles to the Vet, General Wavell's Brigade of the 7th Division followed in support, and General Maxwell's Brigade of the same division kept two miles to the right. A three hours' artillery duel ensued, the passage of the river being hotly disputed; but shortly before dusk the mounted infantry and Colonial Horse, turning the Boer right, passed over in a very dashing manner lower down the stream, in face of a heavy fire. In this action, besides the field artillery and naval 12 pdr. and 4.7 in. guns, Lord Roberts employed for the first time with that force two 5 in. siege guns with excellent effect. The same evening General Ian Hamilton occupied Winburg after crossing the Kleine Vet, thirteen miles further to the east. General MacDonald's Highland Brigade of the 9th Division, which has apparently replaced Smith-Dorrien's Brigade of the same division with Hamilton, took part in this action, the Black Watch clearing a kopje on the British right with distinguished gallantry. At dawn on Sunday, Lord Roberts, ascertaining that the enemy had fled during the night, passed his column over the Vet, and encamped by nine o'clock at Smaldeel Junction, where the branch line to Winburg leaves the main line. The enemy, under the command, it is supposed, of Lucas Meyer, were then in full retreat towards the Zand River twenty-three miles further north, having abandoned a Maxim gun, and the large stores that had been accumulated at Smaldeel, which fell to the victors. The British dismounted troops then, holding securely the advance line from

Smaldeel to Winburg, about eighteen miles long, rested, awaiting the arrival of supplies and reinforcements. General Pole-Carew's Division had marched nearly fifty miles in four days. In Saturday's action, at the passage of the Vet, a party of Australian Horse greatly distinguished themselves. They crept stealthily to the rear of a small kopje south of the river held by the enemy, and, fixing bayonets, carried it with a rush. The British loss in the action was comparatively small. Lord Roberts, by his bold strategy and the skillful disposition of his forces, had at every point met the enemy in superior numbers, and by threatening both their flanks with his mobile troops, while the infantry held them in front, had compelled them to retreat with precipitation.

On Monday the mounted troops of both columns, which were kept in touch with each other, reconnoitred to the Zand River, and found the enemy in considerable force. General Hutton camped that night at Welgelegen Station, sixteen miles north of Smaldeel. Meanwhile the repair of the railway, and its temporary deviation over the Vet where the bridge had been destroyed, were being rapidly carried out by the Royal Engineers. General French, of whom nothing had been heard for some days, joined Lord Roberts on Tuesday with his cavalry and horse artillery, a welcome addition to the indispensable mobile troops of the Commander-in-chief, preparatory to a further advance against the enemy, located on Monday in force at Virginia Siding, where the railway crosses the Zand. The enemy's position was strongly entrenched, but it was capable of being turned. The halt on the Smaldeel-Winburg line was utilized to receive the submission of burghers who, tired of the war, "are giving up their Mausers and horses in large numbers." The rest, however, was of short duration, as Lord Roberts on Wednesday reported that Pole-Carew's and Tucker's Divisions, Ian Hamilton's column, the heavy naval and garrison artillery guns, and four brigades of cavalry marched to Welgelegen that day apparently unopposed, and found the enemy holding the opposite bank of the Zand River. In a further brief telegram, despatched on Thursday morning from headquarters, he announced that he had crossed the Zand, and was gradually pushing back the enemy, who still held a strong position. A

third telegram, sent off three hours later, brought the satisfactory news that the enemy were in full retreat from a position covering twenty miles, with our cavalry and horse artillery following in pursuit on three different roads. The British army was then ninety miles north of Bloemfontein, Lord Roberts' new base. Thirty miles further on lay Kroonstad, the recent temporary seat of the Orange State government, but now discarded for Heilbron. Pretoria, the grand objective of the war, was at that time distant about one hundred and eighty miles.

Simultaneously with the forward movement of the two central columns, General Hunter on the extreme west of the strategical front crossed the Vaal without opposition on the 4th inst. at Windsorton, midway between Kimberley and Warrenton. His force consists of General Barton's Brigade with half of General Hart's, and a body of Imperial Yeomanry. His mission may be primarily to invade the Transvaal and move along the north bank of the Vaal, but his objective is believed to be Mafeking, whence news dated the 29th ult., and cheerful as ever, has been received. Colonel Baden-Powell on the 27th was able to assure Lord Roberts, after 200 days of investment, of the continued devotion and resolution of the garrison. On Saturday General Hunter was heavily engaged with a strong Boer force at Rooidam, which place was taken after seven hours' fighting, the enemy retiring towards the north followed by the Yeomanry. During the action General Paget, by a vigorous demonstration at Warrenton against the Boers left at Fourteen Streams, kept the enemy in position there well engaged. General Hunter's success had exposed the Boers right north of the Vaal, and on Monday their position at Fourteen Streams was hurriedly evacuated after an attack by General Paget, whose concentrated and powerful artillery fire contributed in no small degree to the success of the day. The enemy retreated in a northerly direction either towards Christiana, in the Transvaal, or Phokwane on the railway.

For some time Lord Methuen, at Boshof, has held a post of considerable importance, forming the chief, if not the sole connecting link between the main army at Bloemfontein and the western border. Conforming with the general move he, on the 3d and 4th inst., reconnoitred in force to the northeast in the

direction of Swartkopjesfontein, and came in touch with a fairly large force of Boers trekking northwards towards Hoopstad. A general movement of the enemy towards the line of the Vaal and Kroonstad is now taking place. General Brabant, moving up from Wepener, joined hands with General Rundle at Thaba N'chu on Monday to guard Lord Roberts' right rear. The enemy had then entirely disappeared from Thaba N'chu Mountain, having vacated their impregnable position there, but they are said to be now entrenched at Mequatling's Nek with their headquarters at Clocolan. On Tuesday Ladybrand was reported to have been deserted by the Boers, who had heard with consternation of the occupation of Winburg, and, as they believed, of Senekal also, cutting off their retreat to Kroonstad. They, as well as their numerous herds of cattle, now blocking up the eastern roads, may yet be destined to fall a prey to some part of the British forces. With the occupation of Ladybrand the security of the strategical line from Bloemfontein to Basutoland will be assured.

General Hart, of whose movements we have heard but little since the relief of Wepener, occupied Smithfield on the 2d inst., where he captured part of a small commando still in arms in the place, the remainder dispersing. Half of his brigade has since been transferred to the Western border, and has joined General Hunter. The 3d Division under General Chermiside is believed still to garrison De Wet's Dorp, and to have sent a detachment to hold Jammersburg Drift, by Wepener, the scene of Colonel Dalgety's valiant defense. No recent information of the whereabouts of General Smith-Dorrien's Brigade, or of General Kelly-Kenny's (6th) Division has come to hand. It is possible that a movement further to the east is in progress in which they, or a portion of their troops, may be taking part, to cut off the Boers endeavoring to extricate themselves from the Ladybrand district. A recent message from Bulawayo relative to the movements of Sir Frederick Carrington's expeditionary force, stated that a camp was in preparation there for its reception. There are indications that the long period of inaction of the Natal Army Corps is drawing to a close. Sir Redvers Buller has recently reconnoitred towards Van Reenen's Pass, which is traversed by the branch line connecting Ladysmith

with Harrismith in the Orange State. We may expect to hear soon of important operations in this quarter with the object of opening up communications between the central and eastern forces.

THE MARCH TO KROONSTAD.

Lord Roberts entered Kroonstad on Saturday at the head of his victorious troops, the place of honor in the imposing military procession being assigned to his Colonial bodyguard. In occupying this important place, the point of junction of the Vier Fontein branch railway with the main line, and situated only fifty miles due south of the Transvaal frontier at Reitzburg, Lord Roberts has brought the second chapter in his triumphant campaign in the Orange State to a close. His progress from Bloemfontein to Kroonstad has presented a spectacle of uninterrupted success. The incidents marking his daily advance have been perhaps less stirring and dramatic than those that made the invasion of the Orange State so remarkable. But if there were no such brilliant achievements as the cavalry dash for the relief of Kimberley, the capture of Cronje, and the forced march of sixty miles across a waterless waste with horses and men over-wrought, and a commissariat strained to the utmost through the loss of 200 wagons, we have on the other hand beheld with admiration the masterly handling of columns, moving with the decision that comes of perfect control and discipline, and rendered mobile by effective organization to a degree unprecedented in the British army, with the result that the enemy, whose most formidable characteristic is his mobility, has at every point been outmanœuvred, outflanked, and forced into uninterrupted retreat from one strongly entrenched position to another, and with scarcely any appreciable loss on our side. The distance covered by the army since it left Karee Siding on the 3d inst. until it defiled—in part—before Lord Roberts in the market square of Kroonstad on Saturday was about one hundred miles. The first forty were traversed in four days, during which Brandfort, Smaldeel, and Winburg fell, and the passage of the Vet was forced. After a two days' rest at Smaldeel and Winburg the advance was resumed, the remaining sixty miles being marched in four days

more, and a heavy engagement fought after crossing the Zand. This is a remarkable record of which both Lord Roberts and his brave troops may well be proud.

The Union Jack now flies over Kroonstad. Two-thirds of the Orange State has been conquered, the effective opposition of the enemy has been broken, and for the second time the ex-President has taken to flight, and has transferred to Heilbron, as his new capital, what little remains to him of government and authority. Possessed of more determination than his burghers, he is endeavoring to maintain for a little longer what is now a hopeless struggle. With the commandoes still in being at Vrede, Frankfort, Harrismith, and other places in the northeast of the State which the British have not yet entered, he may concentrate a force possibly at Bethlehem on Lord Roberts' right flank. The burghers who are retreating before General Brabant and Sir Leslie Rundle in the southeast may still further swell this force, and a repetition of operations similar to those of the last fortnight about Thaba N'chu may be attempted further north. But, there being now apparently an open breach between the Transvaalers and the Free Staters, Mr. Steyn's object in continuing in arms can only be to obtain, if possible, some terms less humiliating than unconditional surrender. He cannot any longer entertain any illusions as to the issue of the war and as to his powerlessness to stay the advance of the British army now in possession of his country.

The passage of the Zand River in force on the 10th inst. and the subsequent engagement were brilliant operations. A decisive victory was then gained with remarkably little loss. Both the tactics on the actual field of battle and the preceding strategy conducted to baffle and outmanœuvre the Boers were, from all points of view, masterly. Two cavalry brigades under General French, pushing well to the left front, together with General Hutton's mounted infantry, crossed the river a few miles west of the railway, and thence in the face of a continued opposition worked round the enemy's right in a northeasterly direction. General Pole-Carew's division, with the headquarters, following the line of the railway, and flanked by a brigade of cavalry and mounted infantry, with artillery, passed over at

the drift near the railway bridge. General Tucker's division was on the right making for Deelfontein Noord, eight miles east of the railway. About four miles further to the east marched the mobile column under General Ian Hamilton's command towards the cross roads near to Ventersburg. At dawn, under cover of heavy artillery fire, the columns passed to the north bank at their respective points, those selected for the centre and right being screened by the 2d Batn. Cheshire and 1st Batn. Derbyshire Regiments, which had crossed during the night and entrenched themselves. The passage of the left and centre was almost unopposed, but Ian Hamilton on the right of the extended line met with determined resistance, and a vigorous attempt was made to turn his right. This, however, was successfully repulsed after some hours' fighting by Smith-Dorrien's brigade. The enemy's right wing was the first to give way, the ground to the west of the railway, where the British cavalry were thrown well forward, being unfavorable to prolonged defense. In the more broken and hilly country to the east the advance of Generals Tucker and Ian Hamilton gained ground less quickly against the Boer centre and left, but a well-executed turning movement round the left flank by the 21st Brigade, seconded by a frontal attack by the 19th Brigade, forced the enemy back. Towards the close of the action the 1st Batn. East Lancashire and the 1st Batn. Royal Sussex Regiments, pressing gallantly forward with the City Imperial Volunteers, seized commanding ground, and the Boers abandoned their position precipitately before the British infantry could reach them with the bayonet. The enemy, who had fought throughout the day with greatly diminished spirit, finally broke along their entire line, and fled from the field followed by the mounted troops in hot pursuit.

At daybreak on the 11th the army continued its forward march on a wide front of about twenty miles, and as evening fell Lord Roberts was twenty miles further on his way. The troops moving in several columns were disposed in the same order of march as on the previous days, but with the left rather more advanced owing to the openness of the country west of the railway. General French operating in that quarter succeeded in seizing a drift over the Valsch River in time to pre-

vent the passage being opposed. The Headquarters with General Pole-Carew's Division followed the line of the railway, having General Tucker a short distance to the southeast, while still further to the east came General Ian Hamilton. Six miles to the north, and covering Kroonstad from the south, stretched the entrenched position of the Boers at Boschrand, where a determined stand was expected. Early on Saturday, however, when our advanced troops reached that point, the trenches were found to be tenantless, the enemy having abandoned them during the night. Lord Roberts accordingly pressed his columns forward on Kroonstad, and, meeting with no opposition, took formal possession of the place shortly after mid-day. The Boer defense had suddenly and unexpectedly collapsed. The Transvaalers—at feud with the Free Staters—had refused to fight again in the Orange State, and had retired towards the line of the Vaal with artillery and baggage, accompanied by their generals, Botha and De Wet. With the occupation of Kroonstad, and the retirement beyond the Vaal of the Transvaal Boers, the opposition of the lesser of the two republics has been practically overcome.

While the main army approached Kroonstad, an important movement, resulting in the reoccupation of Dundee and Glencoe, and the turning of the Biggarsberg range, was carried out by Sir Redvers Buller. Acting under orders to keep the enemy in northern Natal occupied, he marched, with the 2d Division and Lord Dundonald's cavalry, towards Helpmakaar on the 11th inst., despatching Bethune's mounted force at the same time in the direction of Greytown, some sixty miles southeast, apparently to mislead the enemy. On Saturday the 5th Division moved out to the east from Elandslaagte and occupied Indoda Mountain, eleven miles distant, to cover and support General Buller's movement, while Bethune, changing his course to the north, made for Pomeroy. The enemy's position, lying a few miles southwest of Helpmakaar, was on Sunday assailed in front by Sir Redvers Buller's infantry, the cavalry simultaneously turning the right flank, and Bethune's force operating round the left and rear from Pomeroy. After a feeble resistance the Boers gave way, retiring on Helpmakaar, and during the night continued their flight to the north. As they

went they fired the dry grass of the hills, thus adding greatly to the difficulties of the pursuit. Lord Dundonald on Monday, following up the enemy in the face of the heat and smoke, covered forty miles in an almost waterless country, a fine performance which called forth the well-deserved commendation of Sir Redvers Buller. On Tuesday Dundee and Glencoe, places rendered memorable by the fierce engagement fought there in the early days of the war by the late Sir Penn Symons, over whose grave the Union Jack now flies, were again occupied by the British. On Thursday Sir Redvers was at Dannhauser with his advanced patrols as far as Newcastle. The enemy, to the number of about 7000, made good their retreat, some in the direction of Laing's Nek, and others towards the Transvaal border by way of De Jager's Drift on the Buffalo River. By this successful operation the formidable line of the Biggarsberg, entrenched with so much skill and care, was turned and rendered untenable, with but slight loss to the British. Mafeking, resolute, even cheerful, but very hungry, still awaits relief, so far as is officially known, though the air has been full of rumors that the happy event has actually taken place. On Saturday the place is stated to have been heavily assaulted, but without success. A flying column was reported from Pretoria to have reached Vryburg on the 9th, proceeding northwards by forced marches, but to have been checked and repulsed on Tuesday at Kraaipan, about thirty-six miles south of the town. Reports from Boer sources should, however, be received with caution. A mystery hangs over the relief column, which was increased by the intelligence that Sir Archibald Hunter had invaded the Transvaal from Fourteen Streams, and hoisted the British flag at Christiana. South of the Vaal Lord Methuen has occupied Hoopstad.

For some days Sir Leslie Rundle and General Brabant have been sweeping back the Boers who infested the country between Mequatling's Nek and Ladybrand, and who attempted to pass the British cordon and again raid the southeast. The design has been completely frustrated by a skillful distribution of troops, and the enemy have been steadily pushed back. A great store of grain has been seized at the Leeuw River mills, and Metquatling's Nek and Ladybrand occupied. Many pris-

oners have been taken, many more of the enemy have surrendered, and the residue, completely disorganized, have trekked northwards, probably making for Bethlehem. Thus along the entire front substantial progress is being made in the great combined advance on Pretoria. According to the information which comes to hand as we close our columns the situation continues to improve in all regions of the theatre of war. There is no official news as to the relief of Mafeking, it is true, but everything tends to justify the hope that Colonel Baden-Powell and his gallant little band have been freed ere this from further anxiety. It was by the 18th, it will be remembered, that Lord Roberts promised that relief should come. We have reached the 18th now, and it may reasonably be expected that within twenty-four hours the hearts of Her Majesty's loyal subjects all over the world will be gladdened by the news that all is well. The gallant garrison have sent so many cheering messages themselves that it is only fitting and right that they should not be disappointed now when all is going so well elsewhere. That the end of the war is fast nearing there can be no doubt, for even the Boers themselves seem to have abandoned all hope of standing much longer against Lord Roberts' splendid generalship, which has effectually silenced the critics of the Continent, who are full of admiration both of the man and his methods.

THE RELIEF OF MAFEKING.

The anticipations respecting the relief of Mafeking, to which we gave expression in our last issue, were speedily realized. On the 18th inst. a Reuter's telegram reached London from Pretoria, which was couched in these terms: "It is officially announced that when the laagers and forts around Mafeking had been severely bombarded, the siege was abandoned by the Boers. A British force advancing from the south then took possession of the town." The message that brought the welcome news within an hour or so of midnight on Friday last, although emanating from a Boer source, contained internal evidence of its truth, and was at once accepted. Official confirmation, placing the matter beyond all doubt, arrived from Lord Roberts on Monday afternoon. As a fitting accompaniment to the good news came the announcement of the promotion of

Colonel Baden-Powell to the rank of Major-General, a prompt and well-merited recognition of military service of exceptional brilliancy. The accounts of the relief show that the operation from start to finish was a bold and dashing exploit, admirably planned, and successfully carried out with the utmost rapidity, adroitness, and secrecy. A flying column, commanded by Colonel Mahon, 8th Hussars, well-known for his service in connection with the defeat and death of the Khalifa, started north from Barkly West on the 4th inst., under cover of the passage of the Vaal at Windsorton, by General Hunter, on the same date. Its strength was about 2300, comprising Imperial Yeomanry, Imperial Light Horse, Diamond Fields Horse, Kimberley Horse, and Royal Horse Artillery, besides "pom-poms" and Maxims, with picked men of the Irish Fusilier Brigade, a train of wagons taking supplies to the starving town. On the 7th Taungs, seventy miles to the north, was reached, and on the 9th Vryburg, forty miles further on. A detour to the west was made to avoid a Boer force at Pudimoe Siding, ten miles north of Taungs. On the 13th, while making a wide sweep to the west by Setlagoli to elude a commando approaching from Maritsani Station, the column was heavily attacked near Kraaipan, on ground thickly covered with bush, but after a brisk engagement repulsed the enemy, and proceeded on its way. Two days later the forces of Colonel Mahon and Plumer joined hands at Jammsibi, twenty-five miles west of Mafeking, but their combined advance on the town was barred by 1500 Boers strongly posted nine miles due west of the investing lines. A fierce engagement ensued on the 16th, which lasted for many hours, but resulted in the complete defeat of the enemy, who retreated to the east, leaving the way to Mafeking open. A detachment of Canadian artillery arriving on the field by forced marches contributed to the enemy's discomfiture. Thus ended an ineffectual siege of over seven months, during which the Boers had vainly used every effort in their power to crush the little garrison. On the morning of the 7th, Colonel Mahon, eluding the enemy by a night march, entered the town with his victorious troops, having covered from Greefputs, the point of starting, 223 miles in ten days. The actual daily rate of marching on several days was twenty-five miles, and on one day thirty-five. This sus-

tained effort was borne well by both men and animals, notwithstanding the constant high rate of speed, and at times an almost total absence of water.

On the 12th, as the flying column sped upon its way, Mafeking was fiercely assaulted, for the last time, with an audacity unusual with the Boers. Before daylight Commandant Eloff, said to be President Kruger's grandson, with some 300 men, rushed the eastern pickets along the Molopo valley, and stormed the native town, which they set on fire. Their further progress into the *enceinte* was barred by the defenses, but a fort held by Colonel Hore with a small party was attacked and overpowered. The garrison of the town, rallying on both flanks, closed in upon the rear of the assailants, and a desperate fight at short range, which lasted throughout the day, ensued. In the end Eloff, deserted by some of his force, surrendered with 120 men and some officers, many Frenchmen and Germans being among the prisoners. This crowning success at the close of the siege was a fitting termination to the magnificent defense that will ever be coupled with the name of Baden-Powell, and which has added fresh lustre and prestige to British arms.

No events in the war, now—as we believe—approaching its close, will stand out more conspicuously than the heroic defense of Ladysmith, Kimberley, and Mafeking. Opinions will differ, no doubt, as to the wisdom of holding those places, judging from the point of view of strictly correct strategy. There will be little difference of opinion, however, as to the almost certainty that their abandonment would have largely increased the enemy's power of inflicting perhaps irreparable loss upon our colonies in the early stages of the war, and there can be none at all as to the magnificent valor, endurance, and resourcefulness of the three beleaguered garrisons and their brilliant commanders, while the British flag was kept triumphantly flying in the face of approaching famine, unceasing bombardment, and the deadly depression that comes of daily diminishing hope. The time test of endurance places Mafeking, with its 217 days of investment to May 17, ahead of the other two. Kimberley, with its large population, held out bravely for 123 days. Ladysmith, where the danger of capture by assault, or of succumbing to famine was perhaps greater, endured its trials for 118

days. The investment and defense of these places belong now to history, as well as the manner of their relief. Neither the famous flank march setting Kimberley free and entrapping Cronje, the series of sanguinary encounters on the Tugela leading up to the glorious battle of Pieter's Hill, which opened the gates of Ladysmith, nor the dash to the north to raise the siege of Mafeking will soon be forgotten. With characteristic promptness General Baden-Powell, on the day of his release, united his force with the relieving columns, and a combined attack was made on the enemy's head laager, which was heavily shelled and abandoned with its stores and ammunition. The Boer forces, with the exception of one commando, apparently left to cover the retreat, dispersed in various directions. After a halt of ten days at Kroonstad for the repair of the railway and the formation of a new depot of supply, Lord Roberts on Tuesday left a division there to guard the place, and resumed his forward movement. He reached Honings' Spruit, twenty-three miles north, on the same day. On Tuesday, also, General Ian Hamilton, working up from Lindley, driving De Wet before him, entered Heilbron, thirty-five miles northeast of Honings' Spruit, after a series of engagements. General French, in advance of Lord Roberts' left, was then across the Rhenoster River, some ten miles west of the main line of advance. By these rapid forward movements the enemy's entrenched positions along the north bank of the Rhenoster were effectually turned on both flanks, and on his arrival at the south bank of the river on Wednesday morning Lord Roberts ascertained that the enemy had fled during the night. General French at once pushed on to Prospect, five miles north, General Hamilton advancing on the right. By the relief of Mafeking Lord Roberts' strategy has been freed at length from the disturbing element due to the necessity of subordinating his general plans, to some extent at least, to the release of invested garrisons at outlying and inconvenient points. Henceforth the campaign can proceed with undisturbed regularity and despatch, the various columns coöperating as directed from the centre by the master mind of the Commander-in-chief. Four columns may, if required, now converge on Pretoria and Johannesburg. With the main army advancing from the south, supported to the east by

the Natal Army Corps, to the west by a column operating along the Vaal, and further north by a fourth force striking due east from Mafeking, any commandoes the enemy can place in the field should be quickly swept aside, and the Transvaal capital brought within sight in a time that might now almost be reckoned by days. When he reached the Rhenoster River Lord Roberts was not more than 110 miles from Pretoria.

Sir Redvers Buller has been for some days detained at Newcastle owing to the extensive damage to the railway. He has had, unfortunately, to report the loss of a squadron of Bethune's Horse, ambushed by the enemy between the northern border of Zululand and Vryheid, where the country is very favorable to Boer tactics. Laing's Nek and Botha's Pass are stated to be held in force. On Saturday General Clery's Division encamped on the battle-field of Ingogo, twelve miles north of Newcastle, while Dundonald searched the road as far as Laing's Nek; and on Monday Buller's scouts had crossed the Buffalo River into the Transvaal. The marching powers of the troops in all quarters of the field have been remarkable. General Buller's force, operating over mountainous country, covered 138 miles, by the circuitous road taken, between the 10th inst., when Ladysmith was left, and the 18th, when it reached Newcastle.

Of the remaining columns there is little fresh to record. Lord Methuen is acting along the Vaal, from Hoopstad, on Lord Roberts' extreme left. Sir Leslie Rundle and General Brabant, in the southeast, are still manœuvring against the disorganized commandoes holding the country between Ficksburg and Bethlehem. The Boers there are being steadily pushed to the north. Ladybrand and Clocolan are now securely held by the British, and Ficksburg was, on Thursday, reported clear of the enemy. General Hunter is engaged in repairing and opening the western railway to Mafeking. Sir Charles Warren has been on the move and has taken the town of Douglas, inflicting loss on a rebel commando. Of Sir Frederick Carrington nothing has been heard recently, but at the proper time he will doubtless appear on the Transvaal border from the north, when it may fall to his lot to play an important part in the closing scenes of the war.

THE SURRENDER OF JOHANNESBURG AND PRETORIA.

News of a startling and unexpected nature reached London on Thursday morning. The special correspondent of the *Daily Mail*, Lord Rosslyn, telegraphing from Pretoria on Wednesday, at 11.40 A. M., stated that Pretoria would be occupied in about two hours from that time, without resistance; that the President had gone to Waterval Boven, and that the burgomaster was authorized to receive the British. A Reuter's despatch of the same date from Pretoria stated further, that the British advance guard was half-way between Johannesburg and Pretoria, that a force was also reported at Hatherley, west of the capital, on the Delagoa Bay Railway, and that the Boer forces had been dismissed from the forts round Pretoria. Two important despatches from Lord Roberts at Germiston, also sent off on Wednesday, were published by the War Office on Thursday. In the first he announced that the Commandant of Johannesburg had begged him to defer entering that town until Thursday, to allow of its complete evacuation by the armed burghers, and to this request he had agreed. In the second despatch the Commander-in-chief referred to severe fighting sustained by General Ian Hamilton's column on the previous day, which we describe elsewhere, and to the disposition of his troops. On Thursday, as prearranged, the surrender of Johannesburg became an accomplished fact. Her Majesty's troops took peaceable possession of the town, and the British flag floated over the Government buildings. Lord Roberts' mounted forces were then but a day's march from Pretoria, and any hour may bring the welcome news that the capital of the South African Republic—the grand objective of the campaign—has passed into the keeping of Great Britain. The war will then be virtually over, although guerrilla fighting may continue for a time. The week has been fruitful in great events, and would have been noteworthy had it recorded nothing more than the annexation to the Queen's dominions of the Orange Free State—henceforth to be known as the "Orange River Colony." Since the war of 1870-71 there has been no more brilliant military achievement than Lord Roberts' rapid advance from Bloemfontein to Johannesburg, a distance of about 250 miles, in twenty marching days.

A bold and well-executed strategical movement preceded the passage of the Vaal by the right wing under General Ian Hamilton. This movement was, no doubt, partly intended to mislead the enemy as to the true point of passage, and in that respect was completely successful. The right wing, well in advance of Lord Roberts' central column, which, as before, followed the railway, occupied Heilbron on the 22d, after a smart action at Rhenoster River, the forcing of which was stoutly disputed. Engelbrecht Drift, on the Vaal, lay eighteen miles due north of Heilbron, and the enemy, supposing it to be Hamilton's intention to attempt the passage at that point, was reported to have made preparations to oppose him there in force. The central column was then at Honings' Spruit, a day's march in rear, and General French, nearly twenty miles ahead on the left, was across the Rhenoster. Both wings were thus operating far in advance of the centre, and making their dispositions preparatory to forcing the line of the Vaal. On the 26th ult. Lord Roberts, in a brief despatch from Wolvenhoek, a point on the railway fifteen miles south of the Transvaal frontier, announced that the advanced portion of his force crossed the Vaal on the Queen's birthday near Parys, a point lying twenty-four miles to the west. There is some reason for thinking that the passage of the river at Parys may have been effected by the troops under Lord Methuen's command, which had been working up along the Vaal from Hoopstad. General Ian Hamilton had then reached Boschbank, thirty-five miles northwest of Heilbron, where he was on the 22d. At Boschbank he was eight miles west of the main line, instead of twenty-three miles east of it, having marched obliquely across Lord Roberts' front and formed a junction with the left wing under General French. On the 25th French crossed at Lindique's Drift, ten miles west of the railway, while General Broadwood's cavalry brigade secured Wonderfontein Drift three miles higher up the river, where he covered the passage of Ian Hamilton's column on Saturday. On Sunday Lord Roberts with the remainder of his troops passed to the north bank at Viljoen's Drift south of Vereeniging. The drift had been seized beforehand by the 4th Mounted Infantry Corps under Colonel Henry after a slight skirmish, an attempt being made

at the same time to save the railway bridge, which was only partially successful as the most northerly span was blown up and wrecked by the retreating Boers. The 3d Cavalry Brigade, which crossed the day before at Engelbrecht Drift, covered the main column to the east. The various points by which the British army entered upon Transvaal territory covered a front of some twenty-five miles. When the last of Roberts' columns passed to the north of the river on Sunday morning the operation, which commenced on the Queen's birthday, was completed. The territory hitherto known as the Orange Free State then lay subjugated behind the British army, and at Church parade that day the Commander-in-chief proclaimed its annexation by Great Britain.

The series of rapid and skilful movements, by which the bulk of the mounted troops were thrown across the Vaal in advance of his left centre, enabled Lord Roberts both to save the coal mines south of Vereeniging from destruction, and also to secure the comparatively open country lying to the westward of the main line of advance for the further forward movements of his mobile wings against the right of the Boer positions south of Johannesburg. Monday saw the army early in motion again, and on that day the headquarters reached Klip River, twenty miles to the north, and but fifteen from Johannesburg. French and Ian Hamilton were operating ten miles to the westward. Sinister rumors had for some time been abroad that the mines and other property at Johannesburg were doomed to destruction, and although little credence had been given to the reports, the Commander-in-chief doubtless desired to place that important town and district beyond the reach of any desperadoes who might be tempted, through a desire for revenge, to commit acts of wanton destruction before the arrival of the British. The march was therefore pressed forward without intermission. Position after position, entrenched and evidently intended to be stoutly defended, was abandoned without a blow, the enemy retreating in hot haste at all points. At Klip River Station the last train, containing five of the enemy's guns, was all but captured by the West Australians, who dashed into the station as the train steamed out towards Pretoria.

Continuing his rapid march on Tuesday, Lord Roberts in

the afternoon occupied Germiston, ten miles east of Johannesburg, and little more than thirty miles from Pretoria. He was then in possession of Natal Spruit Station, the junction of the southeastern railway leading through Heidelberg to northern Natal, and of Elandsfontein station, the junction of the southwestern railway connecting Johannesburg, Potchefstroom, and Klerksdorp with the main line. The enemy, not expecting the British until the next day, had not carried off all their rolling stock, and no mines, so far as Lord Roberts knew at the time of his despatch, had been injured. The seizure of these junctions secured for the Commander-in-chief a central position, cutting the various portions of the defending forces from one another, paralyzing their further efforts, and rendering him master of the situation. On Wednesday Johannesburg was practically surrounded by the British. The headquarters with the 11th Division and heavy artillery was south of the town. The 7th Division with Gordon's Cavalry and Mounted Infantry held the northern heights. Hamilton lay due west at Florida, which was not occupied without a heavy engagement on Tuesday, in which the Gordon Highlanders bore the brunt of the fighting, and cleared the enemy's position with the greatest gallantry, and the City of London Imperial Volunteers greatly distinguished themselves. French was a few miles to the northeast. Lord Roberts, with his forces so disposed, had the place completely in his power, but he consented to delay his entry for twenty-four hours at the urgent request of the Commandant, as already stated.

While Lord Roberts was pushing his main army forward at the utmost speed towards Pretoria, Sir Redvers Buller remained inactive before the formidable lines of Laing's Nek, where 8000 Boers were said to block his way. Had he so desired, he might, with his powerful army corps of 30,000 men have forced a passage through the pass, or found a way round it; but in resting inactive he has played a well-considered part in this ably-conducted campaign. A powerful section of the enemy's forces, which otherwise might have reached Johannesburg and delayed Lord Roberts' advance, was thus held inactive within their trenches under the shadow of Majuba and Pogwani mountains, until their retreat on Johannesburg and Pretoria.

was effectually cut off, and their further coöperation in any system of organized defense rendered impossible. Although abstaining from offensive operations in obedience to the general plan, Sir Redvers had been concentrating his force for an early forward movement. General Hildyard's (5th) Division marched into Newcastle on Sunday and joined Headquarters. On the same day General Buller, annoyed by the pressure of the enemy on his right rear, despatched General Hildyard to seize Utrecht, and General Lyttelton to move on Doornberg and Vryheid. Utrecht was occupied without resistance, and an important step was thus taken towards turning the flank of the Boer position at Laing's Nek, the early abandonment of which is now probable.

General Rundle, still operating to the east of the main line of advance, was engaged with a large Boer force near Senekal on Monday, and on the same day General Brabant had two of his patrols cut off and captured. General Baden-Powell, with a force from Mafeking, is reported from a Boer source to have occupied Zeerust on Monday, and General Hunter, with his division, is said to be also moving eastwards from the western railway at Maribogopan. Colonel Plumer is guarding the railway north of Mafeking, now in working order to Bulawayo. Of the movements of Sir F. Carrington there is nothing to record, except that the highest praise is due to the gallant Canadians and Australians detached by him to join Colonel Plumer in the relief of Mafeking, for the marvellous rapidity of their marching and the gallantry displayed by them on the occasion. All accounts are agreed as to the brilliancy of their performance, which shows the excellent "stuff" of which our Colonial troops are made.

MOUNTED INFANTRY.

BY MAJOR JOHN M. MACARTNEY.

(From the United Service Magazine.)

RECENT operations in South Africa herald the dawn of a new era in tactical combinations, and strange as it may appear, they point to the association of two such opposite factors as position artillery, and extremely mobile infantry.

A careful study of the question, however, reveals the fact that the great range, rapidity of fire and delaying power of magazine rifles, render such a combination not only possible, but very effective.

Guns of position and mounted infantry must enter largely into all military forces of the future, particularly in defense.

Mounted infantry is by no means a novelty. Kellermann's Dragoons and the British Carabiniers were formerly mounted musketeers, who eventually became cavalry. Mounted infantry has of late years been employed in Afghanistan, Burmah, and Egypt. For years South Africa has given scope for its development.

Great Britain alone among European nations has attempted such an organization. The Mounted Infantry School at Aldershot has existed for several years, and on the outbreak of the war some 3000 men trained there were despatched to the Cape, where they were largely supplemented by similar colonial troops. Unfortunately, the rôle assigned to them was that of cavalry rather than infantry, consequently, when opposed to the Boers in the earlier stages of the fighting, they failed.

The title, Mounted Infantry, is itself probably at the root of the evil. It is hard to persuade the officers that mounted does not of necessity mean cavalry. Had the term been "Mobile," and applied equally to infantry on horseback, on cycles, or conveyed by any animal, or machine, it is hardly possible the troops could have regarded themselves as a species of hussar or dragoon.

Unfortunately, a horse combines most of the qualities necessary in a conveyance for such troops, and the moment a foot-soldier gets on his back he forgets that his sphere is still on

foot, and begins to ape the airs and graces of the true horse-soldier. In this he is tacitly encouraged by authority.

In a former edition of "Infantry Drill," there was a paragraph stating that mounted infantry were to be employed on reconnoitring, during a march. Happily it is now removed, but authority to use it for this duty still remains, in the case of no cavalry being available. No doubt if mounted infantry, when so engaged, encountered the opposing cavalry screen, it would charge in the orthodox style. Reconnoitring is purely a cavalry duty, and the only part which mobile infantry ought to take in it is the protection of the cavalry retreat.

Brigading mounted infantry under officers of well-known cavalry proclivities only makes the matter worse, and the result is that the daily press teems with reports of mounted infantry reconnaissances. This means a waste of material, for mobility compensates to a great extent for weakness in numbers, but is frittered away in such work. In South Africa the extraordinary extent of front held by the Boers, in comparatively small numbers, revolutionizes accepted theories of defense, which appears to be the rôle *par excellence* of mounted infantry.

Great difficulty is experienced in out-flanking mounted men, as they prolong their line at will, regardless of communications, trusting to recover them by a concentrated attack.

For instance, the Spytfontein-Magersfontein line was said to extend for nearly thirty miles, while Cronje had only some 12,000 to 15,000 men to hold it. Nevertheless, Lord Methuen failed in a frontal attack, and admitted his inability to turn it with an equal force.

Experience is a harsh teacher, but its crude methods have many advantages.

In spite of his gallantry the British soldier has had much to learn, and he is taking the lesson to heart. The enemy he finds like a will-o'-the-wisp, moving rapidly from point to point; he appears as if by magic in deserted trenches, and deals out death from a distance of half a mile. Even the soldier begins to realize that the Boer has a clever notion of applying the mobile qualities of a horse to the field of battle, and gradually the idea is being adopted.

There are rumors in the air of a coming strong man who is

to clean our military stable. He will, indeed, be another Hercules if he sweeps away the glamour surrounding cavalry, and relegates it to its proper place in modern tactics.

Cavalry, as a force fighting on horseback, died when the magazine rifle was born. Doubtless there will still be occasions when gallant horsemen will sacrifice themselves for the general good, but there is hardly a conceivable position in modern war where they would not secure a better result by using the carbine on foot in preference to the traditional charge.

Colonel Martin recognized it at Omdurman against an indifferently armed foe. Had the Dervishes been armed with magazine rifles the fate of his gallant corps can be imagined. Of course this is all heresy, but it is true. It is doubtful if even in a pursuit, which is the only possible occasion where the *arme blanche* could avail, it would not be more profitable to head off the flying troops, and destroy them by fire. It is so easy for a resolute body of riflemen to check cavalry, as, for instance, a party of the 9th Lancers after Belmont.

Cavalry is known as the eyes and ears of an army, and these organs are most sensitive; it should therefore be carefully protected, but mounted infantry, on the contrary, is a fist capable of a severe blow at a distance from the main body, while it can rapidly return to the guard, and prepare for an attack in another direction.

These are the tactics taught by the Boers; to them the horse is only a means of movement, abandoned when the fight begins, and recovered when it is over. They do not fritter away their strength in isolated reconnaissances, they remain concentrated, and act at the vital spot for the time being.

I once heard a gallant horse artillery officer expatiating on the value to be derived from the weight of his guns in a cavalry charge, and when mounted infantry officers talk of using a rifle with fixed bayonet as a lance, it is not surprising that the real business of the force is in danger of being overlooked.

Its work is simple enough. That of an infantryman, who can rapidly reach his field of action by means of a horse.

Thus points of vantage can be quickly seized, and held till the more slowly moving brother rifleman arrives.

Mounted infantry can lie concentrated behind a position un-

til the attack develops and then reinforce the threatened point.

It can threaten and possibly turn a flank ; or cover cavalry in retreat.

Smokeless powder and secrecy of movement enable it to destroy with the rifle beaten troops, or seriously disconcert an advance, such as that of the guns at Colenso. It might also occupy detached posts in front of the outpost line, if they are tactical, and not merely posts of observation. As simple outposts, mounted infantry is a waste of power.

The organization should be purely infantry with the battalion as a basis. All cavalry commands and drill should, when possible, be avoided.

The latter are based on the charge, and for mounted infantry should refer to the march only.

The men should be light and wiry, of the rifleman stamp. Good rather than showy riders and, above all, first-class shots.

A hunting seat is preferable to a cavalry one, both for man and beast, if much time has to be spent in the saddle.

The horses should be small, of a sturdy breed ; endurance is more necessary than pace.

Fourteen hands to 14.1 hands is the best height, for a small animal is much easier to mount than a tall one.

Equipment should be of the simplest. A hunting saddle, with plenty of D's and a raw hide girth. A polo pelham-bit, with short curb and long snaffle rein. The latter fixed with a running loop, and it should be passed through the snaffle ring on dismounting. A breastplate and crupper will lessen the chance of a sore back, and a rug should be carried under the saddle.

The rifle should be slung over the back. This method has many advantages over the more popular bucket. If the rider is thrown he retains his weapon, and it is uncomfortable to move faster than a trot, as the rifle bumps against the spine. Young and inexperienced commanders often wear out the horses by excessive and unnecessary speed, and require some such reminder.

The bumping can be obviated to a certain extent by bringing the butt forward under the arm, but if cantering is necessary, it is better to unsling and carry the rifle across the saddle.

The pace under ordinary circumstances should not exceed six to seven miles an hour.

A large proportion of the men should be instructed in cold shoeing, and all in the primary treatment of sore backs, the bugbear of the mounted man.

English saddles are usually built for horses with broad flat withers, but foreign animals are high and narrow in that region. The angle at the fork of the tree should therefore be very acute, and the saddle cut well back over the withers.

It is not to be supposed, by any means, that conveyances for mounted infantry are confined to the horse; many kinds of animals and vehicles have been used. Elephants, camels, and even bullock carts. The transport must be suited to the theatre of war. Where good roads exist portable bicycles are convenient, but the Irish jaunting car has many advantages. It is light and strong; only requires one horse, and will carry seven men inclusive of the driver.

It is therefore economical as regards forage, while only one-seventh of the force as against one-fourth, in the case of horses, is non-combatant, but good roads are a *sine qua non*. The Boers in former days solved the non-combatant question by teaching their ponies to stand, but most of the trained mounts appear to have been used up, for stampedes have been frequent.

In future warfare mobile infantry of some kind must be largely used, particularly in defense. In active attack there are still difficulties to be overcome, and chief among them is that of keeping the motive power in touch with the firing line.

On the other hand, a strong mobile force will enable a commander to conceal the real objective till the last moment. For these reasons when reorganization of the military forces is dealt with a mobile infantry must be considered.

The British army is small and its duties are chiefly defensive. No means of augmenting its mobility should be neglected. The infantry should be capable of rapid concentration on threatened points and instruction imparted in the various modes of conveyance.

Mounted infantry should never be called upon to do any reconnaissance that would not fall to the lot of infantry proper.

Although, of course, the distances would be somewhat increased by their superior mobility.

When marching, the point of an advance-guard would seldom require to be more than 1000 yards in front of the main body, and this merely for its own protection.

Any tendency to develop cavalry proclivities should be nipped in the bud, and the corps invariably manœuvred on foot, when not actually executing a march.

The Imperial Yeomanry is an example of the splendid material the country possesses for the formation of regiments, nor would the expense be great if only sufficient horses were maintained for instruction in riding. Under a leader who understands its capabilities mounted infantry must become a powerful factor in war. The Boers know nothing of the gorgeous trappings of the mounted man, which keep so many youths out of the cavalry, and yet their system has been eminently successful. If the British army is not too proud to profit by such an example, many lessons may be learned from the war against the South African Republics. It is practically the first occasion on which magazine rifles have been used on both sides, and the result has been an enormous advantage to the defense. The old rule that in normal country the attack should be to the defense as three to one must be changed, and in future it will be more like five or six to one. That a force of some 18,000 men could maintain the investment of Ladysmith, and keep Sir Redvers Buller at bay, is a marvellous example of what may be accomplished in the way of defense. When the story of the war is written, it will most likely be found that the actual number of the enemy in the field was very nearly that calculated as available by the Intelligence Department, and that the apparent inequality arose from superior mobility and the destructive power of the Mauser.

There is still another factor which requires explanation, namely, the ease with which the enemy has manœuvred its powerful guns of position, not one of which after nearly five months' fighting has been captured.

THE SPIRIT OF THE NATION IN WAR.

BY MAJOR A. C. YATE.

(From the United Service Magazine.)

IT is in the hour of danger and of trial that real grit is tested. Even our foreign critics, who have been far from friendly towards us since the outbreak of the present war, have from time to time recorded a compliment to the stern resolve with which the Government and the nation have faced the unexpected checks which our arms have encountered, in the opening scenes of the South African Campaign. If any exhortation is needed to steel the hearts of the British people in their determination to replace a would-be Boer, by British supremacy, it is to be found in these words of Her Majesty's speech at the opening of Parliament: "I have witnessed with pride and with the heartiest gratification the patriotic eagerness and spontaneous loyalty with which my subjects in all parts of my dominions have come forward to share in the common defense of their Imperial interests. I am confident that I shall not look to them in vain, when I exhort them to sustain and renew their exertions until they have brought this struggle for the maintenance of the empire and the assertions of its supremacy in South Africa to a successful issue."

The ring of that admonition is unmistakable, and no true man in the land, be he prince or peasant, in power or in opposition, would dare to disobey it. The will of the nation demands war, until the purpose of the war is attained. Some months ago the Prime Minister stated that no foreign interference between us and our enemies would be for one moment allowed. Although the Continental press, the self-respecting as well as the reptile, has been almost unanimous in displaying a hostile and carping spirit towards us, there has been no overt sign of hostility on the part of governments, and Her Majesty in her speech was able to say that her relations with foreign powers were generally friendly. The tone of the French press, notably, has been such as to rouse, and that rightly, the strongest indignation in this country; but on the whole it has been borne with that equanimity, tinctured with contempt, which our ablest

leaders of public thought have in their addresses to the nation inculcated, and which our royalty, we may venture to suggest, has endorsed by its silence. It is difficult to believe that this French nation, which has thus stooped to abuse and calumny, is the same that, recovering almost instantaneously from the stunning blow dealt by Germany in 1870-71, rose united to a man, and liquidated in a year or two a war indemnity of £200,000,000 sterling. We are tempted to ask ourselves—"Is the present tone of France the result of thirty years of Republicanism on the national spirit?" If so, let our nation be doubly thankful for the rule of the greatest of England's queens, and for the example that she sets us in all things, in patience under trial, in sympathy with bereavement, and in firm determination to achieve the purpose for which the war was undertaken.

In this war the patriotism of the nation has been irreproachable. Whether it be men or money or money's worth, all have been forthcoming freely and ungrudgingly. Never probably before in the annals of the nation have soldiers, both officers and privates, paid for the honor and glory of fighting the battles of the country. Nay! the country in former wars has had to give a bounty to get soldiers! Who does not remember the press-gang? Who does not recall the fact that the prisons fed the armies of Wellington? And now all, from the nobility to the yeomanry, are paying to serve their queen and country, while the artisans and peasantry would do the same had they but the means. And all are willing to pay with that which men hold dearest—their lives. "Greater love hath no man than this, that a man lay down his life for his friends."

This South African War will be a noble lesson for the nation to take to heart. One thing only jars, and that is the treasonous talk of the Irish malcontents; and even that is more than half discounted by the loyalty with which Her Majesty's approaching visit to Dublin has been welcomed. The patriotism of the nation is, we may say, drawn from its very life-blood. Not only is the nation willing to give that, but the very disappointment, which at times generated despondency in the minds of many, was prompted by the intensity of the heart's feelings.

A brave young officer, lying severely wounded at Wynberg, wrote home two months ago to his friends thus:—"Why this

despondency? we have had no defeats, only checks." That is the word—"checks,"—the word it is a pleasure to note, used by some of the prominent speakers in the recent debate in the House, though others let slip that unpalatable and absolutely inappropriate word "disaster." It is remarkable to find a young wounded officer in South Africa taking a juster view of the military situation than our responsible statesmen at home. His vision, however, was not limited by the purview of party. When we listen to the speeches of well-read and highly intelligent men, such as we know the foremost statesmen of both parties to be, we do expect that a sound view of the military situation in South Africa and of our power of self-defense at home will be enunciated. It was generally understood that in the opening debate of the session the principles of patriotism would predominate over the dictates of party feeling. How far that has been the case every man may judge for himself. No utterance that tends to exaggerate our difficulties or to discourage the nation can be held to be patriotic at this juncture. The opinion of the nation was sufficiently indicated by the result of the division.

Let us turn however from the high level of talent and education represented by our two Houses of Parliament to the great mass of our population, now commonly known as "the man in the street." Whether we have regard to the upper, the middle, or the lower classes, we must recognize that the great majority of each knows nothing, absolutely nothing, of war and the circumstances of war. It is no matter for surprise that, in their case, ignorance of military history and of everything connected with warfare should predispose them, in the event of reverses occurring, to a despondency more or less profound in inverse ratio to the depth or shallowness of their judgment. This despondent or, we may almost say, pessimistic spirit, must be combated. It is the duty of every man of education and enlightenment, be he politician, Churchman, journalist, or a mere "man in the street," to endeavor to counteract it.

What the statesman and politician have said and done, is it not recorded in the chronicles of each day? Has not the Church thrown in its whole weight, by deed and by prayer, with the cause of the nation? And what has journalism done? On the

great guild of the press at this moment, more perhaps than on the dignitaries of Church and State (for does not every man and woman study his or her *1d.* or $\frac{1}{2}d.$ "daily" ?), devolves the onerous duty of guiding the nation aright. The daily press, we are bound to admit, is redolent of patriotism. And yet, when the dictates of patriotic duty have threatened to trench upon what that press has learnt to regard as its privileges, it has, on occasion, placed self-interest before that duty. It has, in the first place, raised its voice, however futilely, against that censorship which is the only safeguard our generals have against the fatal revelations of their plans to the enemy.*

Secondly, its correspondents in the field have magnified in the eyes of the nation the really moderate losses which our troops have so far sustained. Those losses have been small compared with those incurred in battles of the earlier part of the century.† About 3000 is, up to date, the sum total of our losses in "killed in action" and "died of wounds and disease." The war correspondent of a very widely circulated "daily" telegraphed after the action of Graspán that the losses sustained by the marines were "unprecedented." "The truth and nothing but the truth" is as incumbent on a war correspondent as in a court of law. Ignorance is the parent of inaccuracy. That war correspondent knew nothing of military history. How many do?‡

The third and last count is one for which the editors themselves are responsible. They have published in their columns the private letters of officers and soldiers in the field, and they have offered and paid sums of money for those letters. They have thereby caused many officers and soldiers to infringe the orders contained in the Queen's Regulations for the army, orders which forbid the publication of such letters. Many offi-

* They have since learnt wisdom and now preach patience. Necessity is the mother of, among other things, patience.

† It suffices to mention Assaye, Salamanca, Albuera, Waterloo, and Inkerman, and to refer readers to the historians of the Mahratta, Peninsular and Crimean Wars. If we turn to foreign nations for examples, Leipsig, Pruessen, Eylau, Borodino, St. Privat, and Gettysburg may be instanced.

‡ The self-advertising War Artist may be dismissed with a smile. He is a harmless creature. "Shell bursting over the head of our 'Own Special,' as he crosses the Modder River" makes a fine full-page picture.

cers and almost all soldiers are unaware that such an order exists, and few of their relations are better informed. Most of the officers and soldiers who wrote those letters had no idea that they would find their way into the daily papers. Had they thought of it and known the responsibility they thus incurred, they would certainly have cautioned their friends against allowing them to become public. In the Peninsular War we find officers frequently warning their relations that their private letters must on no account be published. Wellington had the strongest objection to it; and he was not a man to be trifled with. In the present case, however, the blame lies at the editorial door. Some of those letters have given information that should have been kept back; others have indulged in most unhealthy criticism and complaint. Wellington, writing ninety years ago to Craufurd, exclaimed indignantly against these criticisms scattered broadcast by men cognizant of half or less than half of the real facts. General Yule's retreat from Dundee is now regarded as a masterly move that saved a division; while Sir George White's attacks at Elandslaagte and Reitfontein prevented a Boer pursuit. Yet did I read published letters from private soldiers, not thanking the generals who had saved them from imprisonment in Pretoria, but growling over the hardships they had endured. Such is the criticism of ignorance, viewing events from a personal point of view only. We need not multiply instances. They have been only too common. All editors (except a few Irish) are patriots. So, too, was Henry Barry, who cried along the streets of Kentish town on a Saturday evening, "Terrible Slaughter of the Boers!" Yet Mr. Plowden rewarded the patriotism of H. B. with a 20s. fine, or 7 days' imprisonment.* There is a tribunal which even editors cannot escape, and that is the tribunal of public opinion, which is guided by the canons of "good form." It is not "good form" to lay officers and soldiers open to the charge of disobeying the Queen's Regulations; nor is it "good form" to publish letters reflecting on generals and commanding officers who, like Sir Henry Lawrence, have "tried to do their duty." One general's widow, be it remembered, felt herself obliged to take up her

* "James Speed" preferred to proclaim a "British defeat." He received the same punishment. It should have been doubled or trebled in his case.

own pen and give a *démenti* to a report to which currency was, injudiciously and inconsiderately, given. No Briton would approve the muzzling of the press enforced in Russia to-day and by Napoleon a century ago.* The "freedom of the press" is as much a motto of our empire as the "freedom of the people." Freedom, under the specious form of "Liberté, Egalité, Fraternité," was and is a farce. Under our time-honored monarchy it is a fact. But the press owes it to Her Majesty's army not to lead its officers and men into transgression against Her Majesty's Regulations for that army.

Patriotism is at this moment the keynote of the empire. It harmonizes the jarring tones of party feeling. It softens the grating accents of snobbishness, it drowns the discords of vulgarity, it gilds the doggerel rhymes of "The Absent-minded Beggar," and it casts a glamour over the distasteful words, "pay, pay, pay." Amid its sterner diapasons it breaks forth into light strains and touches of humor. The march of civilization is marked by strange developments. In the year of our Lord 1900 our Aryan brother steps proudly on a provincial stage in England, and amid the cheers of a British audience is saluted on both his bronzed cheeks by a bewitching American actress and presented by her with the inevitable tambourine. Our Aryan brother paid cheerfully and handsomely for the privilege. Shades of Clive, Hastings and Wellesley! did you ever dream of this?

It were well to persuade the nation to take a broad view of the issues of this war, and not to let their minds dwell unduly on our momentary checks—(*reculer pour mieux sauter*). If there was for a moment any doubt as to the will of the nation, that was settled by the results of the debate on the Address. That endorsed emphatically the message which Her Gracious Majesty sent to her Lords and Commons and to her people all the world over. There are other points also to be borne in mind. The lessons the empire is learning from the war are invaluable. We are proving our strong and our weak points. Our strongest point is the spirit of the empire. It is that which makes our soldiers dauntless and brave. It is that which brings our Reserves, Militia, Volunteers, and Yeomanry forth

* *Vide* Fitchett's "How England saved Europe." Vol. II. p. 76-77.

to fight for their Queen and country. It is that which makes every man, woman and child send either money or money's worth to aid and comfort our soldiers, and their wives and children. It is that which bids the Colonies send tens of thousands to swell Her Majesty's army in the field. Does any pessimist live who thinks that such facts are consonant with failure? If so, we may pity his unhealthy habit of thought. The fleet of the empire has transported 200,000 men and all the horses, guns, transport, supplies, ambulances, and munitions of war needed for them, to South Africa. We may certainly say that no other nation could have done this. It is war not peace that tests the national strength and worth. We are all familiar with those lines in Tennyson's "Maud," beginning—

"Why do they prate of the blessings of peace?"

What Ruskin writes in "*The Crown of Wild Olive*"* may be less well known, but is certainly not less effective. "The common notion that peace and the virtues of civil life flourished together I found to be wholly untenable. Peace and the vices of civil life only flourish together. We talk of peace and learning, of peace and plenty, of peace and civilization; but I found that those were not the words which the Muse of History coupled together—that on her lips were peace and sensuality, peace and selfishness, peace and death. I found, in brief, that all great nations learned their truth of word and strength of thought in war; that they were nourished in war and deceived by peace, trained by war and betrayed by peace—in a word, that they were born in war and expired in peace." We are learning now, in the stress of this South African War, the lessons which will teach the empire and its army to face the far more serious wars that await them in the coming century,—which may, for aught we know, be awaiting them very early in that century.

These checks that we were chafing under have really been an invaluable experience. The nation turned on Mr. Arthur Balfour a few weeks ago for saying that we always commenced our campaigns with ill success. Lord Rosebery said the same, but the press omitted to cast it in his teeth. Philip de Commynes

* "*War*," a lecture addressed to the Woolwich cadets in 1865, by John Ruskin.

wrote thus of the English army that came over to help the Duke of Burgundy in his wars with Louis XI.: "Though no nation is more raw and untrained than the English on their first arrival, yet a little time makes them brave soldiers, excellent officers and wise counsellors." * Mr. Balfour receives from a French historian of the fifteenth century the endorsement which his own countrymen declined to accord him.

The conviction has of late been growing upon the nation that some form of compulsory military training must come sooner or later. The experiences of this war have clinched that conviction. Now that a force of 200,000 men, including Colonial troops, has been placed in the field, it is realized that the British Isles are, as regards military troops, most imperfectly defended. The navy is, it is true, intact. This war has given a strong impetus to the feeling in favor of universal military training. In numbers of our schools now, public, board and voluntary, drill is taught. The number is increasing daily. It has long been realized by thoughtful men that the training and discipline of a soldier's life exercises a salutary influence on the human character. Under this influence each individual soldier comes for a period of years. It is the sum or rather the mean of the individual man that makes the nation. As long as the British Empire finds in the individual man the spirit that has been evinced during this war, that empire may rely on itself. It is much to be desired that compulsory military service, if introduced, may be made a means of reducing the numbers of the "unemployed." It is they who pull down the average of the nation's power for offense and defense.

There is a beautiful story that has just come home from the Cape—the story of the death of Major Childe, one of the Childes of Kinlet in Shropshire. He had a presentiment that he was to be killed and he instructed his brother officers that, in the event of his death, the following inscription was to be placed over his grave—"Is it well with the Childe?—It is well." He was killed and his behest was obeyed. Lord Donaldson read the Burial Service. So far in this war nothing has happened—though mistakes have been made and our arms did not at once carry all before them—anent which in reply to the

* Quoted by Sir William Lee Warner in the *Times* of the 9th February.

query, "Is it well?" we cannot confidently answer "It *is* well."

This war with the Boers has been a most invaluable experience and lesson to the nation. To statesmen of all parties it has brought home the urgent need for developing the defensive resources of the empire. To the army it has taught its strength, —to be gloried in, and its weaknesses, to be, as far as human power availeth, remedied. The Church in this crisis has taken its stand, as of old, by the State, and given its prayers and used its power in aid of Queen and country. The people has had to affirm its patriotism with the seals of patience and perseverance. To that great estate, the press, the war has been, indeed, invaluable.

CORD SIGNALLING FOR INFANTRY OUTPOSTS AND PATROLS.

BY LIEUT. GRIEVE, ADJUTANT 6TH (VOLUNTEER) INFANTRY REGIMENT.

(From the Journal of the United Service Institution of New South Wales.)

THIS paper is a report of a little experiment which I tried with my company of the Scottish Rifles at an all-night parade at Maroubra Bay, in January, 1896. I am not certain that the method is new, but I have never heard of a similar system of signalling being used until a few days ago. Our drill books tell us that communication between sentries, groups, pickets, etc., shall be kept up by visiting patrols, connecting sentries, etc.—S 171 and between the different portions of the outposts and the main body by visual signalling, supplemented by mounted orderlies if necessary, or in country unsuitable for signalling, by cyclists or mounted orderlies—5.158. It is with the communication between sentries, groups, and pickets I propose to deal. The use of visiting patrols means a large amount of fatigue and the use of visual signalling would depend on the number of signallers available. As the establishment of signallers per battalion is only six, it would be impossible to attach one to more than say one picket in three. Mounted orderlies cannot act over broken ground at night and must keep to the roads if there be such. Cyclists can only act in a good country, although in any position having a road as a lateral communication they would be of some service, particu-

larly as they are noiseless. These are the means of communication mentioned by our text-books, but I considered it possible to supplement them and save an enormous amount of fatigue by the use of cord communications. These have the recommendations of—1. Simplicity; 2. Require little previous training; 3. Dispenses with visiting patrols, and 4. Can be carried out in strict silence. The very first duty of outposts is to secure the repose of the force they cover and to do their work with as few men as possible.

Having this in view, I provided a few balls of cord of the quality known as "Post Office," each weighing about 1 lb. and containing about 120 yards. These were carried by N. C. O.'s in the haversack. On arriving on our ground each group had one ball allotted to it, and each man of those detailed for the reconnoitring patrol one ball, while the picket used the remainder to furnish communication with the groups (2). As soon as the group sentries were posted, the N. C. O. of each group left the end of the cord with one man of the double sentry, running out the remainder as he retired. As the instructions on this occasion were that the "line of observation" was to be the "line of defense," the distances between sentries, groups, and pickets, were of course very short, and did not anywhere exceed 200 yards.

Having dealt with the communication between the stationary parts of the outposts, I will now give the instructions given to the N. C. O. in charge of reconnoitring patrol. When moving on a broad front they were to keep the cords extended laterally covering about 600 yards, N. C. O. in centre, one man 120 and another 240 yards in rear of centre. When moving in narrow formation the "point" man's cord connected, as did those of the flankers with the N. C. O. and thence direct to the rear. By this means the rearmost man could, if so ordered, double back to the sentries and thus pass on to the picket any message he was instructed to forward. The code arranged was:

1. One tug. "All correct," or "I understand."
2. Two tugs (distinct pause between). "Enemy in sight in front in small numbers."
3. Three tugs (distinct pause between). "Enemy in sight right in small numbers."

4. Four tugs (distinct pause between). "Enemy in sight left in small numbers."

5. Five tugs (distinct pause between). "Advance or re-inforce."

6. Six tugs (distinct pause between). "Anything to report?"

7. One double tug (given quickly). "Halt."

8. Two tugs and pause between. "Enemy in sight in front in force."

9. Three tugs and pause between. "Enemy in sight right in force."

10. Four tugs and pause between. "Enemy in sight left in force."

11. Five tugs and pause between. "Retire."

12. Six tugs and pause between. "Commence firing."

This code, hurriedly compiled, was only given to the N. C. O. of my corps a day or two before the parade, but notwithstanding this and the fact that they had to instruct their men on the ground, very few mistakes were made. When patrolling, if a signal was not intelligible, or as happened occasionally, the cord caught on a stump, etc., the halt (one double tug) was given and the patrol halted until the cord was cleared.

Briefly, this is the whole system, which is, of course, very crude indeed, but that it is serviceable is proved by the following:

The writer, who was in command of the extreme left picket, had it under arms about 3 A. M. on Sunday morning, but expecting an attack at day-break, left his picket under a senior officer and went out to the front with the reconnoitring patrol. When about 1000 yards in front of the sentry line, the advance of the left flanking party of the attacking force was signalled (No. 4) by the left flank man of the patrol which was extended in line. Signal 7 "Halt" was passed along the line, signal 4 was repeated to the rear and the man who received it doubled back to the sentry, who passed it on to the group, thence to the picket. As the attacking party could not see the patrol and were on the water's edge they were allowed to pass, and when 200 yards past our flank, signal 11 "retire" was given and the patrol followed in their rear after having made sure they were unsupported.

The picket, previously warned, opened fire at 500 and the patrol also opened fire from the rear, on which the commander

of the attack, seeing he was surrounded, agreed to be placed out of action.

Considering the men had no previous training the work was done admirably and showed the system is of use under certain conditions. The information is so quickly sent to the picket that the commander has ample time to make his disposition and pass the information to the rear.

Curiously enough I noticed in James' "Indian Frontier War of 1897," published a few months ago, an account of an Afridi "sniper" who was shot by the pickets while crawling up towards one of our bivouacs. He was found to have a cord communicating with his friends in rear. This shows that great minds are not confined to any nation.



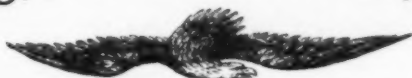
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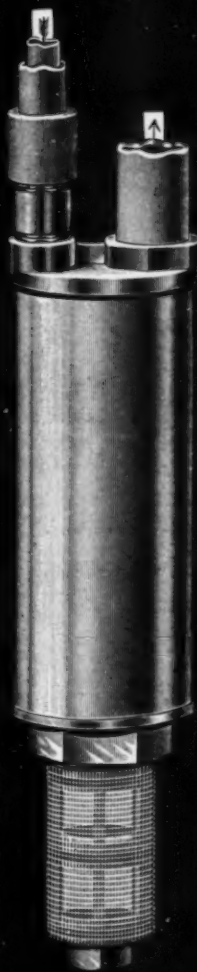
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Comment and Criticism.

"THE BATTLES AROUND SANTIAGO, AS OBSERVED BY A
SWEDISH OFFICER."

IN Captain Wester's account of the engagements around Santiago, as translated by Colonel Britton, which appears in the May number of the JOURNAL, he does a great injustice to a Massachusetts regiment which did its every duty and bore its full share of the hardships of that campaign.

He says, "finally, at El Caney, the 2d Massachusetts, which was under the command of Ludlow, refused to follow the movement, after suffering the effects of the first discharges," and that "it stubbornly refused to advance after observing the effects in their ranks caused by the Spanish bullets."

As commanding officer of the 2d Massachusetts, and knowing the facts, I say that the foregoing statements are false and without even shadow of truth, and my excuse for troubling you about this matter is, that I cannot allow the imputation to pass unchallenged.

Now that I have stated positively that Captain Wester's statements relative to the 2d Massachusetts at El Caney are untrue, he is under obligation to either substantiate or retract them.

By giving the foregoing the same publicity that was given Captain Wester's statements, you will greatly oblige,

E. P. CLARK,

Late Colonel 2d Mass. Vols.

Announcement.

By a Resolution of the Executive Council,
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Military Notes.

THE LAWS AND USAGES OF WAR.—OF SPIES.

NO war ever passes without considerable attention being drawn to the subject of spies, who may, indeed, be considered a universal and necessary adjunct to military operations. Although the name is generally looked upon as implying something of reproach, yet it is to be doubted whether, on the whole, any body of men engaged in military operations is more entitled to our respect and consideration than those who thus venture their lives and their reputations in the secret service of their country. Of course, we do not speak of that despicable wretch, the traitorous spy.

Before entering further into detail it will be well to grasp the exact definition of the term, about which some misunderstanding occasionally arises. Thus it is laid down by—

1. The Project of the Brussels Conference—

“No one can be considered as a spy except a person who, acting clandestinely, or under false pretenses, collects or seeks to collect information in places occupied by the enemy for the purpose of communicating it to the adverse party.”

“Military men without disguise, who have penetrated into the zone of operations of the hostile army in order to gather information, shall not be considered as spies.”

“In the same way military men (and also civilians openly accomplishing their mission) charged with the transmission of despatches destined for their own or the enemy's army, shall not be considered as spies if captured by the enemy.”

“To this category belong equally, if captured, individuals sent in balloons to transmit despatches, and in general to keep up communication between the different parts of an army or territory.”

2. The Code of the Institute of International Law—

“An individual may not be regarded as a spy who, belong-

ing to the armed force of either belligerent, penetrates, without disguise, into the zone of military operations of the enemy. Nor does the term apply to aeronauts, or to couriers, or messengers who carry openly and without concealment the official despatches of the enemy."

3. The Instructions for the United States army—

"A spy is a person who secretly, in disguise or under false pretense, seeks information with the intention of communicating it to the enemy."

4. The English Manual of Military Law—

"A spy, in a military sense, is a person who is found in a district occupied by the enemy collecting, *secretly and in disguise*, information respecting their condition and designs, with a view of communicating such information to the opposing force. Secresy and disguise are the essential characteristics of a spy in a military sense. An officer in uniform, however nearly he approaches to the enemy, or however closely he observes his motions, is not a spy, and if taken must be treated as a prisoner of war."

It will be observed that the whole essence of these definitions or descriptions is contained in the words of the English Manual—"secresy and disguise are the essential characteristics of a spy," and even these words are rather too wide, and possibly misleading, as the "secresy" referred to is implied in the "disguise," and the former word might well be omitted. Secresy indeed, without disguise, does not render a man a spy. The "military men without disguise who have penetrated into the zone of operations of the hostile army in order to gather information," who are expressly stated by the Brussels Conference not to be spies, must necessarily preserve as much secresy as possible. Secresy is a recognized essential of military operations, and is allowed in all operations, so long as the combatant character of the agents is manifest. Disguise then is the characteristic of a spy.

It was on account of the disguise under which they attempted to veil their operations that the two officers, one American and the other English, Captain Hale and Major André, were executed during the American War of Independence. The case of the latter is, of course, very well known, being com-

memorated, indeed, by a tablet in Westminster Abbey, inscribed to one who is generally in this country looked upon as a martyr. The case of Captain Hale is not so much remembered, but it is well to place the two cases side by side as they afford in one respect a striking contrast, which is rather unfavorable to the English. After the defeat of Washington at Long Island, in 1776, and his consequent retreat therefrom, Captain Nathan Hale, one of his officers, returned in disguise to the island, then occupied by the British, in order to obtain information about them. Being captured on his attempt to return to Washington, he was taken before General Howe, who gave immediate orders for his execution as a spy, although he held a regular commission as an officer in the American army, on the ground that he had assumed a disguise. It is reported that "these orders were carried into execution the very next morning, under circumstances of unnecessary rigor, the prisoner not being allowed to see a clergyman, nor even the use of a Bible, although he respectfully asked for both."

Major André's case occurred four years later. Everyone knows of the treason of the American General Benedict Arnold, who commanded the fortress at West Point, which he arranged to surrender to the British. André was the chosen medium of communication between the British army and the American traitor. Being taken likewise in disguise, whilst seeking to return to the British lines, he was condemned to death as a spy, but was not executed until about three months after his capture. In the meantime apparently everything was done by the Americans to mitigate the severity of his imprisonment, the only harshness which he experienced being the refusal of his request to be shot instead of hanged.

In both of these cases the unfortunate officers clearly came within the definition of the word "spy," and, as the law was then, and still is recognized in strictness, the death penalty was their due. As to the mode of infliction of the penalty, both sides, indeed, may be open to criticism, the English for the indecent manner in which they hurried on the execution of Hale; the Americans for their harsh refusal of André's request for a bullet instead of a halter. It must, however, be

admitted that the comparison is rather to the disadvantage of the British.

It will be observed that the rules both of the Brussels Conference and of the Institute of International Law, provide that "individuals sent in balloons," or "aeronauts," are not to be considered as spies. These provisions were no doubt occasioned by the extraordinary claim set up by the Germans in their war with France to treat such persons as spies. Neither secrecy nor disguise being possible in such cases the demand made by the Germans has universally been held to be outrageous, and we shall probably hear no more of it. The definition of the word "spy," indeed, seems so clear that there is no need to enlarge further on it.

As to the punishment of spies there is little to be said. We will set out on this point the provisions of the four sets of rules which we quoted as the definition. Thus we read:—

1. The Project of the Brussels Conference—

"A spy taken in the act shall be judged and treated according to the laws enforced in the army which has captured him."

2. The Code of the Institute of International Law—

"Spies captured in the act cannot demand to be treated as prisoners of war."

"No person, charged with being a spy, shall be punished with that offense until the fact of his guilt shall have been established before a competent military tribunal."

3. The Instructions for the United States army—

"The spy is punishable with death by hanging by the neck, whether or not he succeed in obtaining the information or in conveying it to the enemy."

4. The English Manual of Military Law—

"Spies, when taken, are punishable with death, since * * * there is scarcely any other means of guarding against the mischief they may do."

These rules present little similarity beyond their vagueness, but it may be gathered from them and from general usage that a spy may legally be put to death in any humane way, even by hanging, but regular judicial process should be observed. Doubtless, confinement will steadily tend to replace the death penalty, except in extreme cases.—*United Service Gazette.*

HOW FROZEN MEAT DETERIORATES.

Meats frozen and kept in cold storage for long periods do not undergo organic changes in the ordinary sense—that is, they do not putrefy, soften, or smell bad, but they certainly do deteriorate in some intangible way. After a certain time frozen meat loses some life-principle essential to its nourishing quality. Such meat lacks flavor; it is not well digested or assimilated. Its savorless condition cannot be remedied or successfully disguised by the use of sauces and condiments. Those who eat cold-storage food for any length of time develop diarrhoeal disorders, lose in weight, and would eventually starve to death unless a change of diet was made. The same reasoning applies to tinned fruits and vegetables. They should not be used after a certain period has elapsed. Especially should people be warned against using stale eggs and old milk and cream. Milk and cream are kept for days, rancid butter is washed and treated chemically, but all food, and especially cold-storage food, is damaged by long keeping, and will not nourish the body properly. There is the greatest abundance of food, but it does not satisfy.—*Sanitary Record*.

A TEST OF THE MOSQUITO THEORY OF MALARIA.

On June 1st Drs. Sambon and Low, of the London School of Tropical Medicine, will begin a summer residence in a place in the Roman Campagna where æstivo-autumnal malarial fever is most prevalent. They will live in a small wooden building with windows and doors protected with wire screens, which will also be placed under the eaves and over the chimney opening. During the daytime, when the *Anopheles*, or malaria mosquito, does not bite, they will go about at will, but from a little before sundown to some time after sunrise they will keep strictly within doors, although still exposed to the air and soil emanations. Their drinking-water will be the same as that used by other residents of the Campagna, and, in fact, all their conditions of living will be the same, save only that they will be preserved from the stings of the night mosquitos.—*Medical Record*.

DENTISTS FOR THE ARMY.

There is now before the House of Representatives a bill to authorize the appointment to the army, under regulations to be prescribed by the Surgeon-General, of dental surgeons to be attached to the different branches of the service, in the same manner that medical officers are now provided. The necessity for dentists in the army was manifested during the Spanish War and still more during the Tagal insurrection. The bill was recommended for speedy passage by the House committee on military affairs over two months ago, and although it has been on the calendar ever since it was reported, for some reason it has never been acted upon. The measure has the endorsement of army officers, dentists, and physicians throughout the country.—*Medical Record*.

AN ARTILLERY AMMUNITION COLUMN TRIAL.

A trial mobilization of an artillery ammunition column was made on the 30th May last by the artillery regiment belonging to the 5th Army Corps quartered at Presbourg.

The ammunition column consisted of 36 wagons, viz. :—32 battalion ammunition wagons with 4 horses each ; 1 wagon with accessories with 4 horses ; 1 baggage wagon with 4 horses ; 2 ration wagons with 2 horses each.

The experiment consisted of two parts : the first, a march through a difficult country ; the second a march supposed to be executed in an enemy's country, in the midst of a hostile population where the column was liable to attack by infantry and cavalry patrols.

The first march included the ascent and descent of Mount Gensenberg, 1427 feet high, with steep rugged sides, covered with bushy trees, and cut with narrow, badly kept roads. Advice had been given to halt the wagons at the head of the column at the top of the mountain in order to allow the column to close up before commencing the descent.

In the criticism that followed the operation, both the regimental and brigade commanders laid particular stress on the importance and the necessity of fixing in advance, in difficult country, the places where the column should close up, in order

that the detachment commander might make himself acquainted with the incidents of the march.

The column was preceded at about 325 yards distance by an advance guard, the necessity for which was made the object of a critical discussion. The rôle of this advanced guard consisted in looking out for the best road to follow, to make it practicable, and to clear away obstacles which might delay the march of the column. It was composed of two mounted officers to reconnoitre the road, and a detachment of reserve gunners provided with pioneer's instruments. It had also a certain number of reserve horses, which were left at the most difficult places to assist the regulation teams.

In the ascent of the mountain all the horses, but in the descent only the leaders, were led.

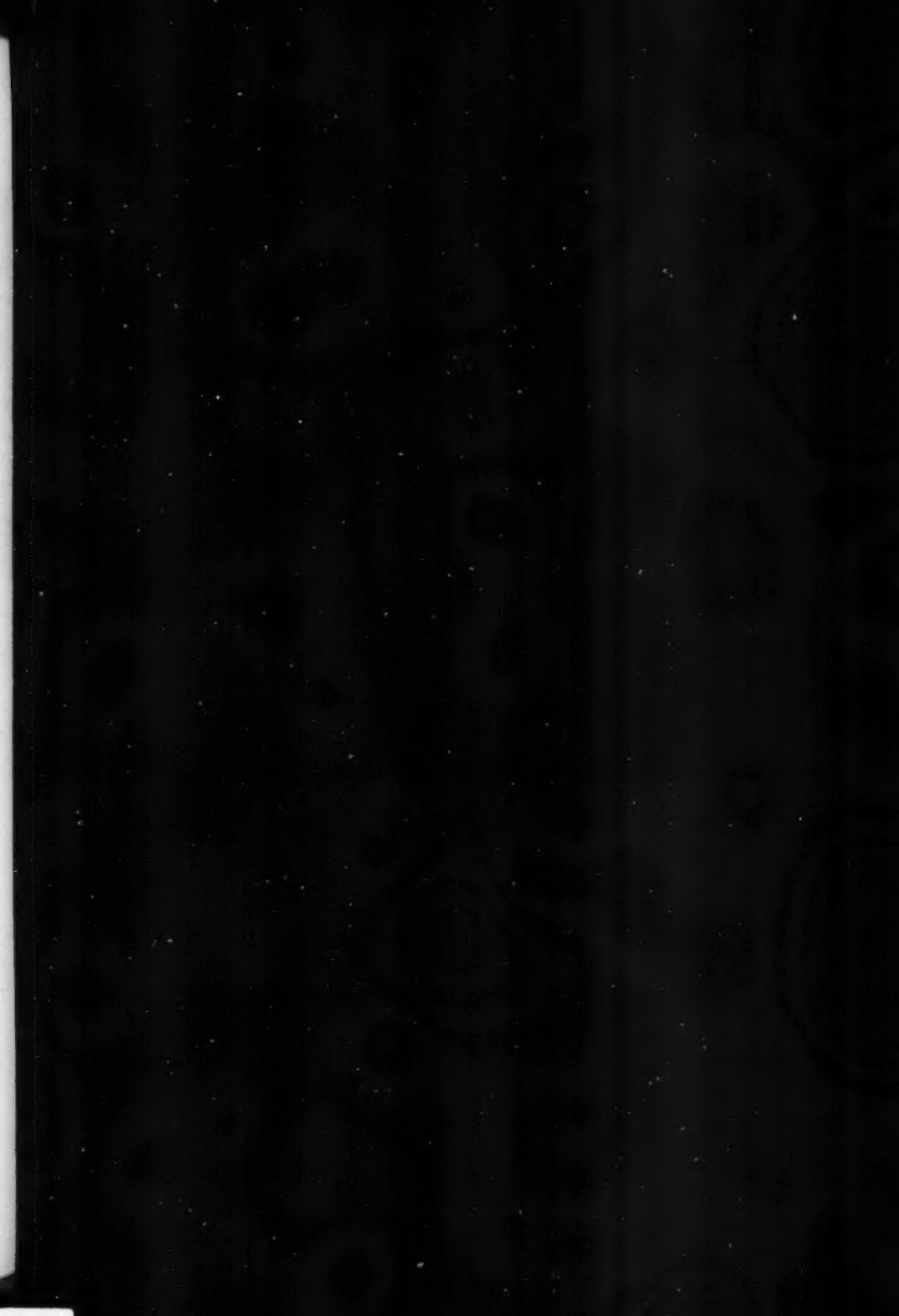
From the commencement of the ascent the connection between the advanced guard and the main body was lost. It was exceedingly difficult to maintain in a country where the roads had so many windings and off-shoots. It resulted in many wagons becoming involved in impracticable roads, and one of them had its pole broken. The pole of another wagon was also smashed in consequence of the horse falling down. At several places, too, the teams had to be reinforced by the reserve horses of the advanced guard.

The second march was carried out in accordance with the following scheme :

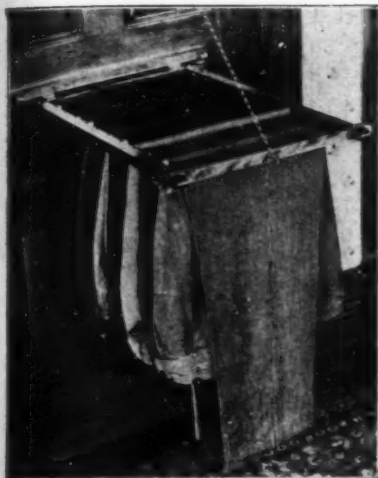
"The column left to its own resources, that is to say, unprovided with a special escort, continues its march from Gensenberg to Blumenau. It should protect itself against possible attempts of the inhabitants of the country and against probable attacks of hostile infantry and cavalry patrols." A detachment of infantry and one of cavalry, each under command of an officer, was sent in advance by different roads with orders to attack the column at the most suitable spots on the road. The commander of the column made the following dispositions : 12 reserve gunners, under the orders of an officer, formed the advanced guard, which was preceded by two mounted men as the extreme point. 12 gunners were echeloned down the wagons, making 1 gunner to every 3 wagons ; 24 gunners were divided into 3 detachments of 8 men each, one detachment

marching at the head of the column, another in the middle, and the third at the end of the column as a rear guard.

Half-way a hostile infantry patrol having been marked down on the outskirts of a farm about 450 yards to the right, the column was halted and the advanced guard, reinforced by the detachment at its head, was sent against the enemy, who immediately fell back. Shortly afterwards a hostile cavalry detachment made its appearance on the left of the column, at the same time that the infantry, that had just been repulsed, opened fire from the outskirts of a wood on the opposite side. The commander halted the column once more, placed the horses under cover, and sent against the cavalry the 12 gunners echeloned down the wagons, the detachment from the middle of the column, and the rear guard; against the infantry he despatched the advanced guard and the detachment from the head of the column. In the criticism the commander of the column was reproved for recommencing his march after the first attack without having pursued the enemy and without having thrown out a flank guard.—*Bulletin de la Presse et de la Bibliographie Militaires.*



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